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ABSTRACT

During its first year of operation (1997-98), the Kentucky Migrant Technology Project successfully implemented its model, used internal and external evaluations to inform improvement of the model, and began plans for expansion into new service areas. This evaluation report is organized around five questions that focus on the project model and its implementation, reaching the target population, service delivery, project outcomes, and evaluation to improve program effectiveness. The project seeks to develop innovative uses of technology to enhance the education of migrant students: to increase academic achievement, continuity of education, and appropriateness of educational programming for migrant students; to decrease dropout rates and increase reenrollment of dropouts; and to increase parental involvement. First-year project activities included helping teachers integrate technology into the curriculum; working on development of an Internet-based records transfer system; monitoring use of software and supplementing it as needed; and providing technology training to teachers, administrators, and migrant parents. The project focused on delivering services within 11 Kentucky school districts enrolling 1,334 migrant students. This report also discusses overcoming educator resistance to new technologies, the processes of identifying and recruiting student participants, statistical data on the services delivered, and the project's objectives and the second-year evaluation to measure progress toward them. Appendixes include a reprinted article "The Electronic Emissary: Bringing Together Students, Teachers, and Subject Matter Experts"; information on eligibility, student recruitment, and Migrant Education Program procedures; newspaper clippings; the project management plan; the project audit list; and a computer user's survey. (SV)

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Kentucky Migrant Technology Project

Ohio Valley Educational Cooperative
Shelbyville, KY

External Evaluation Report 1997-98

Robert J. Popp, Ph.D.
Partnership for Family Education And Support
August 3, 1998

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Kentucky Migrant Technology Project

External Evaluation Report
1997-98

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Executive Summary

The Kentucky Migrant Technology Project completed its first year of operation during the 1997-98 program year. The project successfully implemented its model, used internal and external evaluation systems to inform improvement of the model, and began plans for expansion into new service areas. This evaluation report has been organized around a set of focus questions, ranging from implementation of the model to measurement of outcomes.

What is the model and how is it being implemented?

- The Kentucky Migrant Technology model focuses on the use of technology to enhance the education of migrant students.
- The model identifies ways to use technology to support the academic achievement of migrant students.
- The model is responsive to the academic barriers faced by migrant students: lack of continuity of instruction, inappropriate instructional programming, and high dropout rate.
- The model's proposed activities have undergone a process of field testing, refinement, and revision during this first year of project operation.
- Diffusion of the model has begun. Barriers to model adoption are being addressed.

Is the Kentucky Migrant Technology Project reaching its target population?

- The target population includes two distinct migrant groups.
- A process is in place to identify and enroll eligible students from both migrant groups.
- The enrollment process was field tested during the 1997-98 program year.
- The Migrant Registry, which will be implemented during the 98-99 program year, will document student characteristics and the program's compliance with migrant eligibility guidelines.
- The project has a plan for expansion to other regions of Kentucky, thereby reaching a greater percentage of migrant students in the state, and to regions outside the state of Kentucky.

Is the Kentucky Migrant Technology Project delivering the required services?

- Direct services were provided to students in school settings. The services included: tutoring, small group instruction, and assistance in the use of computer assisted instruction.
- Services were also provided through a collaboration with a local community center.
- In collaboration with the Migrant Education Even Start Program, the project engaged migrant families in a variety of learning opportunities involving technology.
- The project provided training for teachers and administrators to work more effectively with migrant students.
- The evaluation system documented services delivered. Areas for improvement in service documentation have been identified.

Is the Kentucky Migrant Technology Project achieving its intended outcomes?

- The focus of the first year of operation was on implementation of the program model. The data collection system for student outcomes was field-tested. Data from the field tests documented student time on task and pre/post gains in academic achievement.
- Results of the field tests have informed revisions to the system for documenting outcomes.
- Outcomes for all program goals and objectives will be fully measured and statistically analyzed in the Year 2 evaluation report, due August of 1999.

How can the Kentucky Migrant Technology Project improve its effectiveness?

- The project focus is on excellence and becoming a model for the use of technology in education.
- The project uses a continuous progress approach for program development and improvement.
- An internal process is in place to monitor program implementation and to identify areas for improvement.
- The external evaluation provides feedback that is used to inform program improvement.
- Project staff and the evaluator have established networks with content experts that inform program improvement.

What Is The Model and How Is It Being Implemented?

- The Kentucky Migrant Technology Project's mission is to develop innovative uses of technology that will enhance the education of migrant students.
- The model is responsive to the academic barriers faced by migrant students: lack of continuity of instruction, inappropriate instructional programming, and high dropout rate.
- The model's proposed activities have undergone a process of field testing, refinement, and revision during this first year of project operation.
- Diffusion of the model has begun. Barriers to model adoption are being addressed.

The Kentucky Migrant Technology Project's mission is to develop innovative uses of technology to support the education of migrant students. The project has defined a set of functions that technology can perform in the education of migrant students:

- Increase academic achievement through the use of technology.
- Improve continuity of education for migrant students through the use of technology.
- Increase the appropriateness of educational programming for migrant students through the use of technology.
- Decrease the dropout rate of migrant students and increase the re-enrollment rate of students who have dropped out of school.
- Increase involvement of migrant students' parents in their children's education
- Provide training for school system teachers in the use of technology in the classroom.

The following section will examine the underlying assumptions and related research for each of the functions.

Project Functions

Increase academic achievement through the use of technology.

There is a widespread assumption in the educational community, and among the public at large, that using technology in instruction will enhance educational achievement. Kulik and Kulik (http://ericae.net/db/riecje/ej424824.htm) tested that assumption through a meta-anlaysis of 254 controlled evaluation studies "that compared student learning in classes taught with and without computer-based instruction." Results showed that computer-based instruction had positive effects on student learning the majority of the time.

In an earlier study, Roblyer (http://ericae.net/db/digs/ed315063.htm) reviewed 200 studies of the impact of microcomputer-based instruction on teaching and learning. Of the 200 reports, 82 met the statistical conditions for this study's meta-analysis. The study found that computer applications had a statistically significant positive effect ($p < .05$) in a majority of the areas examined. Roblyer addressed several questions about computer use in education:

- Are computer applications more effective at certain grade levels? Significant effects were found at all levels.
- Are computer applications more effective with certain types of content? While effects for science, math, and cognitive skills were slightly higher than for reading and writing, the differences were not statistically significant.
- Are computer applications more effective with certain kinds of students? No differences were found in this group of studies.
- Do student attitudes improve as a result of using computers? Results showed positive effects of computer usage on attitudes toward self, school. and subject matter. Results

were inconclusive for attitudes toward computers as a mode of instruction, which may be due to the small number of studies in this area.

- What is the comparative effectiveness of various application types (drill, tutorial, and other)? Applications in the areas of reading/language and math were included in this analysis. Results showed no significant differences among the effects of different types of tutorials.

- How effective are computer applications in teaching English and reading for ESL students? There was a lack of significant effects in this area, which may be influenced by the small number of studies available for the analysis.

- How effective is word processing in improving writing skills? Positive effects were found on attitudes toward writing.

Similar results were found in a study commissioned by the Educational Testing Service to examine how schools used technology. Results were released in its 1996 report, Computers and Classrooms: The Status of Technology in US Schools. The report summarized the current state of research and provided guidance for further study of how computers influence learning:

- Research generally agrees that drill-and-practice forms of computer-assisted instruction are effective in producing achievement gains in students.

- More pedagogically complex uses of educational technology generally show more inconclusive results, yet many offer promising and inviting educational vignettes.

- Many ongoing educational technology projects are in the process of documenting and recording measures of student motivation, academic outcomes, and other outcomes such as increased skills in problem-solving and collaboration.

- Evaluations of educational technology are really evaluations of instruction enabled by technology, and the outcomes are highly dependent on the implementation of the instructional design.

- Evaluations of educational technology applications must confront a number of methodological problems, including the need for measures other than standardized achievement tests, differences among students in opportunity to learn, and differences in starting points and program implementation.

- Effects of educational technology on teachers should be emphasized because teachers remain in the classroom to influence many generations of students.

Thus, when students have access to computers, and when teachers have integrated computers meaningfully into the curriculum, research has shown that computers can enhance student learning.

A search of the educational research literature for articles on the use of technology with migrant students, however, shows a lack of research in this area. The current group of six federally funded migrant technology projects have the opportunity to make major contributions to the research base.

Improve continuity of education for migrant students through the use of technology.

Increase the appropriateness of educational programming for migrant students through the use of technology.

These two program functions will be addressed by the development of a Migrant School Locator, an on-line database of enrollment information and work samples from migrant students. The Kentucky Migrant Technology Project is currently developing a Migrant School Locator and plans to implement it during the second year of program operation.

Migrant students move from one location to another throughout the school year. Sometimes migrant families notify school officials that they are moving. Sometimes they tell the schools their destination. Oftentimes they do neither.

Migrant families arrive in the new location and enroll their children in a school. Parents may or may not have the language skills to provide accurate enrollment information to the school officials. Indeed, migrant parents may not be comfortable going to their children's schools at all. School officials are left to guess as to the new students' educational levels and appropriate class placements until their school records arrive from the former schools. This can take days, weeks, or months. Sometimes, migrant families have moved again before the records arrive.

In the meantime, migrant students are assigned to classes based on educators' best guesses of their academic and ability levels. More often than not, the placements are not appropriate for the students' needs.

The assumption made by the Kentucky Migrant Technology Project is that lack of continuity of education and lack of appropriate placement of migrant students is the result of a lack of information. If receiving schools had access to accurate and comprehensive placement information on migrants students at the time of enrollment, the schools could assign students to appropriate classes. The students would be able to continue their education with minimal disruption by the move to a new location.

How could educators gain access to enrollment information for migrant students? The Kentucky Migrant Technology Project is developing an internet-based student registry that would contain demographic data, name and location of last school attended, grades, test scores, and student work samples.

The information would be stored in a secure site on the internet. School administrators would be able to access student records at the time of arrival and use the records to make accurate educational placements. Teachers could use the test scores, grades, and work samples to design appropriate instructional plans for migrant students.

The proposed result would be continuity of education for migrant students in appropriate educational settings. The external evaluation will test this proposition as the Migrant School Locator is implemented during the 1998-99 school year.

Decrease the dropout rate of migrant students and increase the re-enrollment rate of students who have dropped out of school.

In the early 1900's, only 5% of the students in the United States completed high school. The completion rate increased during the period 1900-1967, with 77% of the nation's students completing high school during the 1967-68 school year. In a December, 1997 press release, US Secretary of Education Riley announced that the dropout rate was holding steady at 5%: "This means that some 500,000 young people are still short-changing their lives" by dropping out of school, he said. According to the "Dropout Rates in the United States: 1996" report, 9% of Hispanics left school before completing a high school program in 1996, compared to 6.7% for blacks and 4.1% for whites. The press release is available on-line at http://www.ed.gov/PressReleases/12-1997/dropout.html. The dropout rates report is available at http://nces.ed.gov/pubs98/dropout/index.html.

Although the dropout rate has remained stable over the last two decades, there is a growing national concern about students who don't finish high school. An often cited reason for this concern is that today's job market requires workers who are educated, and that the educational level required in the workplace will continue to rise. This concern was reflected in the 1990 State of the Union Address given by President Bush. In that address, the president called for an effort to reduce the high school dropout rate.

Interest in the dropout problem is also increasing in the academic community. Rumberger (1987) states that "more research has appeared in the last two years than in perhaps the previous 15" on this problem. Rumberger goes on to discuss several reasons why the current dropout rate will require increased attention if it is to be lowered. One factor is the increasing numbers of minority students being enrolled. These students traditionally have higher dropout rates. A second factor is that many states are mandating increased academic standards for high school graduation. This will make it more difficult to graduate from high school, and may "push out" of school some of the marginal students.

The dropout problem is typically studied in one of two ways. One approach is to describe programs that have successfully intervened with at-risk high school students. The results of these studies take the form of program evaluations and descriptive case studies. A second approach to studying the dropout problem is to try to understand its causes, and that is the approach taken here. Shortcomings of current correlational studies will be briefly described, then a model for explaining the underlying influences on dropout behavior will be presented.

Correlational studies have identified several factors associated with dropout behavior. These factors include demographic variables such as the lack of an intact family, low SES, being a member of a racial or ethnic minority group, and being male (if you are Hispanic or White) or female (if you are Black). Other factors include behavior problems at school, having bad grades, and the lack of books in the home (Ekstrom, Goertz, Pollack, and Rock, 1986). While these factors are useful as predictors of dropout behavior, they are not the factors that cause that behavior. Thus, they shed no light on how to address the problem. Effective intervention requires an understanding of the underlying influences on dropout behavior.

When dropouts are asked why they left school, they cite factors such as: didn't like school, had poor grades, got a job, got married, couldn't get along with teachers, became

pregnant, or being expelled from school. Again, these factors are symptoms rather than underlying causes of dropout behavior.

The underlying cause of school dropout is a psychological disengagement from school. The disengagement often begins in late elementary or middle school years and culminates in the act of dropping out of school, usually while in high school.

Successful students tend to feel a sense of belonging when they are at school. They value success in the activities that occur at school. They are actively engaged in school-related learning. This leads to an increased sense of belonging. Identification with schooling is strengthened.

Students who eventually dropout of school lack this sense of identification with the process of schooling. They withdraw from the process because they have little sense of belonging, they have no consistent success in school activities, and/or they do not value the types of successes that are available in schools.

Disengaged students stop participating in school activities and many eventually dropout of school. What can be done to reverse this process of disengagement from schooling?

Finn's (1989) Participation-Identification Model provides a starting point for understanding the process that supports students' successful participation in school. The model illustrates how disengaged students can be guided toward more regular participation and identification in schooling.

Finn describes two aspects of identification, belonging and valuing. Students who identify with school have a sense of belonging. School is an important place for them. These students also value the types of success that are available at school. They commit themselves to school-related goals in order to achieve that success.

In addition to the psychological state of identification, there is a behavioral component of the model, participation. Successful students actively participate in schooling. Active participation leads to success in school-related goals, which strengthens an identification with school.

Finn identifies four levels of participation in school activities. At the first level, the student is responsive to the demands of the teacher and the classroom. At the second level, participation becomes more active. Students seek out opportunities to learn within the classroom. At the third level, students seek learning opportunities outside the classroom, in the form of extracurricular activities. Finally, students become actively engaged in school government and other activities related to decision-making in the school environment.

Migrant students have an especially hard time developing an identification with schooling because of their frequent moves. They do not have opportunities to deepen their level of activity in school. They lack opportunities to develop long term relationships with peers and teachers. They cannot establish a base of success in one school location.

Using Technology to Develop Identification With Schooling

In the Kentucky Migrant Technology Project, the model proposes to use technology as a constant base of success for students. Students will be able to access a familiar software

interface on computers as they move from one location to another. The Migrant School Locator will allow school personnel to develop instructional programs that have a consistency across locations and which address the needs of students. This increases the probability that migrant students will become actively engaged in schooling, will deepen that engagement over time, and will develop an identification with schooling. As identification with schooling strengthens, the probability of dropping out of school decreases.

For students who have already dropped out of school, the technology-based instruction offers an opportunity to re-engage with schooling. If dropouts can become comfortable with the software interface and work regularly on computer-based activities, this increases the probability of deepening their activity level and increased identification with schooling.

Increase involvement of migrant students' parents in their children's education

What does research say about the parent's role in children's educational success? It says that when parents have the knowledge and skills to support children's education in an authentic fashion, then parental involvement is a key to children's educational success.

Popp (1992) surveyed the research literature on parental involvement. He found three main categories of studies: those that focused on status variables, those that focused on family process variables, and those that focused on the sociocultural contexts of families. The studies of sociocultural context provided the only satisfactory explanation of how parents influence children's academic success.

Studies That Examine Status Variables

One type of study has focused on parent and family status variables, identifying correlational relationships between children's academic achievement and characteristics of their parents and their home environments. Children's success in school has shown significant relationships with a variety of variables: educational level of the mother (Baker and Stevenson, 1986); occupational status of the parents (Milne, Myers, Rosenthal, & Ginsburg, 1986); family income level (Alwin and Thornton,1984); the number of books in the home (Mason and Allen, 1986); single parenthood (Thompson & Ensminger, 1989); family disruption (McLanahan and Bumpuss, 1988); family constellation (McGillicuddy-DeLisi, 1982); and family size (Anastasi, 1956).

The examination of status variables is a useful starting point but is not sufficient as an explanation of how parents influence children's development of literacy. For example, children of educated parents are not influenced to succeed in school simply by the parents' level of education. They succeed because of the parental practices usually associated with higher levels of education. The children of educated mothers tend to succeed in school because their mothers have more knowledge about how schools function. Educated parents know how to help children with homework. They tend to provide home learning experiences similar to those found in schools. They attend PTA meetings and parent-teacher conferences more frequently than less educated parents (Baker and Stevenson, 1986). Thus, levels of parental knowledge of schools and, especially, involvement in school activities, rather than parental educational level, are the variables that influence children's development (Stevenson and Baker, 1987; Epstein, 1987).

Likewise, status variables such as occupational status of the parent and family income level are symptomatic of the relationship between families and literacy development. They are

not the variables that influence such development (Iverson & Walberg, 1982). Parents with higher status jobs and higher incomes tend to be more educated. For the reasons stated above, higher educated parents are more likely to have the knowledge and skills to do the things that encourage and support children's literacy development.

The number of books in the home is a third example of a status variable that is symptomatic of family practice. Homes where there are a large number of books tend to be homes where parents read to their children on a consistent basis. Families that own fewer numbers of books tend to be families where storybook reading with children is not a regular practice. The absence or presence of practices like storybook reading, not the number of books in the home, explains how parents influence children's literacy development (Mason and Allen, 1986).

Finally, characteristics of family organization, like marital status and family constellation, are also symptomatic of the variables of influence (Valencia, Henderson, and Rankin, 1985). Single parents have less time to spend with their children, less peer support, and more stress than those who have a stable marital partner. Those constraints on parental involvement with children, not the status of single parenthood, influence children's development.

Thus, it is not the parents' socioeconomic and educational status that influences children's literacy development and subsequent success in school. Rather, it is what parents actually do with their children that influences those things. Parental practices, not status, explain the influence (Bloom, 1986). This has direct implications for design of educational programs. If programs are to be effective, they must address the practices that have been shown to influence children's development of literacy and academic achievement. Programs based on symptomatic variables will not necessarily influence families in intended ways.

For example, a program may assume that donating books to undereducated families will influence the literacy climates of the homes and the children's literacy development. That assumption is based on evidence from literate families' uses of books. What the assumption overlooks is that literate families already have in place a set of practices which incorporate books and reading. Low literate families may not. Simply giving books to low literate families does not guarantee that they will be used in ways that encourage literacy development in children.

Likewise, donating a computer to a migrant family does not ensure that the power of technology can be accessed within that family system. Does the family have within it the technical expertise to operate the computer? Is there a culture of literacy within the family that will support authentic use of the computer? Has there been sufficient education for the family to show how to incorporate the technology authentically into the family's existing social and educational practices?

Studies That Examine Family Process Variables

A second type of study, recognizing the symptomatic nature of status variables, has examined the influence of family practices on the development of literacy in children. Status variables may be included in such studies as background information but parental practices are seen as the variables of influence. Those studies have typically focused on parent-child interactions in terms of: family routines (Greaney, 1986), parents' style of authority (Baumrind, 1970), parents' teaching style (Sigel, 1982; Wertsch, 1985), and

affective quality of parent-child interactions (Estrada, Arsenio, Hess, and Holloway, 1987).

Those studies have identified practices commonly found in the homes of young children who go on to succeed in school. Reading is part of the normal routines in those families. Parents choose to read for their own enjoyment and also read to their children. Parents establish warm relationships with children while, at the same time, establishing clear boundaries and expectations for those relationships. Parents use teaching strategies that prepare children for the ways of thinking and learning found in schools.

While the research showed a clear link between those parental practices and children's success in school, does this mean that family literacy programs can introduce the same practices to undereducated families and expect similar outcomes? Are parental practices transportable across family settings? Baumrind (1970) addressed those concerns in her study of parental authority:

> *The assumption cannot be made that the same factors relate to competence in disadvantaged families as in advantaged families. The effect of a single parental characteristic is altered substantially by the pattern of variables of which it is a part. Similarly, the effect of a given pattern of parental variables may be altered by the larger social context in which the family operates. The relationships discussed here are most relevant for white middle-class families and may not always hold for disadvantaged families.*

The same caution should be applied to other studies of parental practices. Parental practices are embedded in the social and cultural contexts of families. Families' interpretations of literacy practices stem from meanings based in those contexts. Parents in the family process studies, cited above, read to their children, established warm and consistent relationships with children, and taught them in particular ways because those practices were authentic activities within the family contexts. The practices had meaning and importance in those families.

In the same way, the introduction of technology for technology's sake into families will not automatically have the effect of amplifying children's school performance. The technological activities must be integrated into the existing, already meaningful, family practices for it to have a positive effect. The technology must fit into the family's system of meaning, rather than assuming that families can automatically assimilate foreign technologies.

Studies That Examine Families' Sociocultural Contexts

A third type of study has taken a wider view and examined families' systems of meanings and the development of literacy. This view recognizes that literacy practices are defined and interpreted within family and community contexts. The same literacy practices can have different meanings and in different family settings (Scribner & Cole, 1981; Heath, 1983; Teale 1986).

This has direct implications for family literacy programs which attempt to influence literacy practices in families. If family literacy programs introduce new literacy practices to undereducated parents, those practices may not be interpreted in the same ways as in educated, middle class families. In fact, interpretations vary among undereducated families (Heath, 1983).

For example, family literacy programs often encourage parents to read bedtime stories to their children because research shows that this practice is associated with children's later success in school. In one case, a mother may be reading stories to her children already. It was a practice common in her home when she was a child and she has continued it with her own children. Following the program's suggestion, the mother begins to follow that routine at bedtime. In this case, the activity itself already had meaning and value within the family context. The mother simply scheduled it to coincide with bedtime.

Another mother may adopt the practice of reading to her children at bedtime because the program said it was a good thing to do. Reading to children may not be a normal family activity but the mother does it because she thinks it will help her child succeed in school.

It is likely that the activity of storybook reading in these two cases would be qualitatively different and that the messages that parents sent to children about books would also differ (Heath, 1982). Unless family literacy programs address families' meanings associated with storybook reading, or other literacy practices advocated by such programs, simply encouraging the practice may not have the intended effect for all families. How families interpret the practice is the key to understanding the influence of the practice.

Likewise, the activity of using a computer can have different meanings in different family contexts. Technology does not automatically cause positive educational outcomes for children. The technology must be assimilated into the family's system of meaning. This requires at least three distinct things to happen. Family members must understand the benefits of technology as they apply to educational expectations and aspirations within the family. They need to be trained to operate the technology. And, finally, they must be able to see how the use of technology supports the outcomes defined as success by the family's system of meaning.

Provide training for school system teachers in the use of technology in the classroom.

A study by the Congressional Office of Technology Assessment (OTA) examined the uses of technology in education. The OTA study, Teachers and Technology: Making the Connection (April 3, 1995), identified several factors that influence teachers' use of technology in the classroom. The factors are described in Chapter 4, "Helping Teachers Learn About and Use Technology Resources:"

- Most teachers have not had suitable training to prepare them to use technology in their teaching. A majority of teachers report feeling inadequately trained to use technology resources, particularly computer-based technologies. Although many teachers see the value of students learning about computers and other technologies, some are not aware of the resources technology can offer them as professionals in carrying out the many aspects of their job.

- In a majority of schools, there is no on-site support person officially assigned to coordinate or facilitate the use of technologies. Even in schools where a technology coordinator exists, most of the time is spent supervising students, or selecting and maintaining software and equipment. Very little time goes directly to training or helping teachers use technologies.

- To use technology effectively, teachers need more than just training about how to work the machines and technical support. To achieve sustained use of technology, teachers need hands-on learning, time to experiment, easy access to equipment, and ready access to support personnel who can help them understand how to use technology well in their teaching practice and curriculum.

- Schools and school districts are using a number of different approaches for training teachers and implementing technology. These include developing "technology-rich" model schools; training a cadre of teachers who train and help their colleagues; providing expert resource people; giving every teacher a computer; training administrators alongside teachers; and establishing teacher resource centers. Data do not confirm that any one strategy is more effective than another; often they work in combination. Districts may be well advised to use multiple training and support strategies tailored to the educational goals of the local site.

- Lessons from experienced implementation sites suggest that those who wish to invest in technology should plan to invest substantially in human resources. Currently most funds for technology are spent on hardware and software. Increasingly experienced technology-using sites advocate larger allocations for training and support.

- Support for technology use from the principal and other administrators, from parents and the community, and from colleagues can create a climate that encourages innovation and sustained use.

- Schools should avoid acquiring technology for technology's sake. Developing a technology plan--thinking through the goals for technology use at the local site and involving teachers in the planning process--is an important step in ensuring that the technology will be used by those it is intended to support. Many districts have found that it works best to start with small focused efforts, which can engender lessons, success, and experience before committing to more large-scale programs.

- Although sites have made significant progress in helping teachers learn to use generic technology tools such as word processing, databases, and desktop publishing, many still struggle with how to integrate technology into the curriculum. Curriculum integration is central if technology is to become a truly effective educational resource, yet true integration is a difficult, time-consuming, and resource-intensive endeavor. Research funding is needed to help explore and develop technology tools best suited for specific curriculum areas, especially disciplines other than science and math.

The OTA findings have direct implications for the Kentucky Migrant Technology Project's efforts to train teachers to learn and use new technologies. They support the direction that the project has already taken, with an emphasis on training of teachers and integration of technology into core curriculum.

The OTA findings show that on-going training and technical assistance are necessary for successful implementation of technology in classrooms. Integration of technology into existing curriculum is also a key factor in adoption of technology in the classroom. The technology should enhance what students are already learning, rather than being implemented as "technology for technology's sake."

Project Activities

The functions of the program model were implemented through a variety of project activities. The model's activities have undergone a process of field-testing, refinement, and revision during this first year of the project.

Continuity of Education

The Kentucky Migrant Technology Project staff work with children's classroom teachers to develop appropriate instructional activities. Children's skills are assessed through the ALS software, informal testing by project staff, and though consultation with classroom teachers.

Instructional activities are designed to supplement classroom curriculum. ALS software lessons provide skill reinforcement. Power Point-based lessons provide ESL instruction. Internet-based sites, whether accessed directly or through sites downloaded to compact disks, provide content related lessons.

Children maintain portfolios that document their academic work. The ALS software documents time on task and level of achievement on lessons completed. We are planning to add on-line documentation to the Computer Assisted Instruction (CAI) now being developed by the project staff.

When children move to a new location, records are transferred to the receiving school to help in the development of appropriate education plans. Currently, while our internet-based records transfer system is in development, the records are being transferred through the mail and by fax. Telephone and e-mail contacts are also used to help receiving schools plan for intake of migrant children. In the near future, when the internet-based Migrant School Locator is fully operational, records transfer will be done electronically.

Records Transfer

The project has made great strides during this first year of the grant to develop an internet-based records transfer system. This on-line database, called the Migrant School Locator, is in the final stages of development and should be operational in the near future.

The definition of fields for the system was based on existing data collection systems--the Kentucky Migrant Education Certificate of Eligibility and the Migrant Students Database Requirements for Kentucky.

Project staff reviewed the fields, eliminated redundant information, and added a section to contain student portfolios. The project contracted with a computer programmer to write the computer code for the database.

The programmer worked in conjunction with the project coordinator and the technology specialist to develop the database. The beta version of the database was recently completed. The technology specialist is adding finishing touches to the interface and field testing the system.

This has been a major accomplishment for the first year of the project. The project originally investigated the use of existing software for the Migrant School Locator. A review of the existing software showed that there were few database products that would fulfill the needs of the Migrant School Locator. Of those that were adequate, the price and yearly lease fees were too high to maintain them within the project budget.

The project coordinator decided to design the Migrant School Locator from scratch. This had three advantages. One was that the database could be designed specifically for migrant educational programs. Fields could be specific to the data drawn from the migrant population. A second advantage was that the database could be designed for use as an internet-based record transfer system, rather than trying to adapt an existing database product.

Finally, the project has been able to develop a cost-effective solution to the need for an on-line database. The cost of designing and developing the Migrant School Locator has been less than the cost of many existing software packages.

Technology Choices

The original grant proposal focused on the use of the ALS System as the core instructional tool. Computer equipment was purchased to support implementation of the ALS system--desktop computers and monitors, laptop computers, printers, and software. Project staff, with the guidance and support of the project coordinator and the technology specialist, set up the computer equipment, installed software, and addressed problems that arose.

As the project was implemented, the project coordinator implemented a system for monitoring the effectiveness of the ALS software. This system provided feedback on how the system was being used, by whom, and how well it was supporting children's school-based educational programs.

This monitoring system identified areas where the ALS system was not addressing student needs. The project coordinator moved quickly to identify hardware and software solutions to address this problem.

Power Point software is now being used to develop supplemental lessons for students. Corel presentation software has also been used for this purpose. The project has also bought equipment for downloading internet based instruction and storing it on compact disks.

The project is now shifting to the development of customized, computer-based instruction, to fill the gaps not addressed by the ALS software.

The project coordinator has moved quickly and decisively to address the shortcomings of the ALS software. This is a testament to his careful monitoring of the project and willingness to explore alternate technological solutions.

Professional Development

The project has provided a wide range of activities for professional development during this first year of operation. Staff have received training in the use of technology and its implementation with migrant students. Staff have trained school-based teachers and administrators in the use of technology with migrant students and have provided technical

assistance in the implementation of technology in the schools. Project staff have also trained students and their parents in the use of technology.

Use of Technology by Parents and the Community

The project has begun working with a local community center sponsored by a local charitable organization. Project staff have placed computers at the community center and trained its staff to use the software. The center addresses the educational and social needs of migrant workers, many of whom are young adults. The Kentucky Migrant Technology Project has been able to reach out to this community through the center.

A second area of involvement with the larger community has been through collaboration with the local Migrant Education Even Start program (MEES). Project staff have worked directly with parents from the MEES program, introducing them to instructional activities on the computer. The activities have included those that support the parents' educational development, and also activities that parents can do with their children.

In addition to addressing its mission to develop innovative uses of technology in migrant education, the Kentucky Migrant Technology Project has also addressed the need to disseminate this model to a wider audience, which is an important function of any model program. Progress was made during this first year of operation to fine-tune the model's implementation and to expand the network of schools that are implementing the model. Diffusion of the project model is discussed in the next section.

Diffusion of the Project

During this first year of program operation, the Kentucky Migrant Technology Project had varied success in different school districts in gaining a buy-in for the project. Some administrators were more enthusiastic than others. Some teachers were more open to participation than others. Is there an underlying theory that can explain these differences in willingness to adopt new ideas? Does the research literature provide guidance in overcoming resistance to adoption of new technologies in education?

Rogers (1983, The Diffusion of Innovations) did an extensive study of how organizations adopt innovations. He developed a framework that explained how innovations were accepted within organizations. He found that organizational members differed in the ways that they adopted innovations. He identified five categories of adopters within organizations (pp. 247-270):

1. **Innovators: Venturesome**

   Eager to try new ideas. Risk takers. More likely to form social relationships with other innovators nationally and globally, than with other members of the immediate social network who are not innovators. May not be respected by member of the local social network, but innovators serve a key function by bringing new ideas and innovations into the social system.

2. **Early Adopters: Respectable**

   More integrated into the local social system than innovators. This group contains more opinion leaders than the other types. Early adopters are seen as role models within the

social system. Others trust the judgment of early adopters and look to them for advice in adopting innovations. Change agents use early adopters to help speed the diffusion process.

3. Early Majority: Deliberate

Take more time to deliberate before adopting new ideas and technologies. Well integrated members of the local social system. Once they decide to adopt a new idea, this type implements it with deliberation. They seldom lead. The early majority provides a link between the early adopters and the late majority.

4. Late Majority: Skeptical

This type waits until most others in the social system have adopted an innovation before they make the decision to do so. Logical arguments about the utility of an innovation may not be sufficient to influence this type's decision to adopt. Pressure from within the social network may be needed to convince this type to adopt.

5. Laggards: Traditional

The last to adopt. This type's point of reference is the past. They are resistant to change. When they do adopt an innovation, it has often one that has already become outdated and replaced in the social system.

This framework can inform the planning for innovation adoption, such as placement of computers in schools and training teachers to incorporate these tools into instruction. Early adopters, for example, should be targeted for early and intense training. Once they are comfortable and skilled with the technology, they can sell their peers on the advantages of adoption.

When the use of computers shifts from instructional tool to communication tool, a slight different framework is needed to understand the adoption process. To meet this need, Rogers (1986, Communication Technology: The New Media in Society) updated his framework with an analysis of the unique characteristics of communications technology. Dr. Judi Harris summarized how Rogers' framework for communications technology differs from that documented in his classic 1983 text ("Mining the Internet," in The Computing Teacher, October, 1994):

1. A *critical mass* of adopters must be using the innovation to persuade potential adopters to do the same: "the usefulness of a new communication system increases for all adopters with each additional adopter" (p. 120). Telecommunication networks will not readily be used by teachers until a noticeable community of educators, and/or information resources designed specifically to support precollege education, are present online.

2. The *degree of use* of a communication innovation, rather than the decision to adopt it, is the dependent variable that will indicate the success of the diffusion effort. Teachers will continue to use Internetworked tools and resources, once introduced to their application, only if they use them regularly and frequently now.

3. New communications technologies are *tools*, which can be applied in many different ways and for different purposes. Therefore, adoption of these innovations is an active process that involves much re-*invention*, or "the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation"

(Rogers, 1983, pp. 16-17). Teachers will continue to use telecomputing tools in the classroom only if they are successful in designing professional development and instructional activities that employ and personalize use of the tools that meet specialized needs.

Rogers' frameworks can be used to understand how institutions adopt innovations, including the special case of communications. They can also be used in this particular project to guide efforts to increase schools' "buy-in."

As shown in Rogers' frameworks, an innovation may be adopted by the organization, but this does not guarantee that all members of the organization will automatically begin using it. Why do some members resist adopting new ideas? In the case of technology, why do some teachers resist adopting new tools for instruction?

Ragsdale (1997; ERIC Document Reproduction Service No. ED 405860) collected ten years of case study data from elementary and secondary education settings on the use of technology in instruction. Results indicated that:

> ...teachers implementing an innovation are initially most concerned about their own interaction with the innovation and only later do they shift more of their concern to the students; this can result in many of the "teachable moments" being lost because the teacher was not part of the interaction.

Because of this detachment from the students' interaction with the technology, teachers were not able to document accurately the amount of student time on task, the quality of student interaction with technology, or even which computer programs that students were using.

Andres (1996; http://www.gsn.org/teach/articles/frontier.html) has examined how teachers adopt new technologies. The research identified five types of reasons why teachers resist the use of electronic communications in schools. The reasons can also be used to understand resistance to technology in general:

1. **Attitude: There is a natural tendency to resist new ways of doing things.**

   Most people are comfortable with doing things the way we have always done them. It is the easiest way to get things done and the outcomes are predictable. Change, on the other hand, is uncomfortable and threatening. They may be open to hearing a new idea, but slow to adopt it.

   Second, teaching is a hard job. There are many demands on a teacher's time--lesson planning, parent conferences, staff meetings, committee meetings, PTA meetings, field trips, extracurricular activities--in addition to actually teaching. Time constraints often discourage teachers from trying something new.

   Third, some people are fearful of technology and resist learning anything about it.

2. **Awareness: Educators don't know what telecomputing is.**

   Teachers may be open to new ideas, such as the use of technology in the classroom, but they lack a knowledge base to guide decisions for adoption. They would not know where to begin.

3. **Application: Educators know what telecomputing is, but they don't know how to use it in their classrooms.**

   As schools increase the amount of staff development and training in the use of technology, more and more teachers are becoming aware of the potential of technology tools to enhance learning. Many teachers are becoming aware of the vision, but have not yet developed the technical skills to put the vision into place in their particular classroom.

4. **Access: Educators know how to use it in their classrooms, but they don't have access.**

   While some educators have developed the awareness and the technical skills to implement technology tools in their classrooms, many lack access to the hardware, software, and telecommunication links necessary to implement the tools.

5. **Accomplishments: Those educators who have successfully integrated telecomputing are not documenting and sharing their successes with the rest of the educational community.**

Are there ways to overcome teachers' resistance to the use of new technologies? The previously mentioned ETS study examined the relationships between teachers and technology and concluded:

- Research shows that helping teachers learn how to integrate technology into curriculum is a critical factor for the successful implementation of technology applications in schools.
- Most teachers have not had the education or training to use technology effectively in their teaching.
- Only 15% of US teachers reported having at least nine hours of training in education technology to obtain a teaching license.
- In 18 states, teacher education students do not need courses in education technology to obtain a teaching license.
- Only 16% of teachers currently use telecommunications for professional development.
- Research on the adoption of innovations in schools consistently points to the key role of administrators to successful implementation.
- Effective staff development for teachers should take advantage of telecommunications technologies that allow teachers to interact with each other, take online courses, and easily access the latest research in their discipline.

Therefore, teachers need sufficient training to be able to integrate the technology into their own classrooms and curricula. Administrators must take the lead in supporting the use of technology in instruction. Staff development should take advantage of the opportunities offered by telecommunications.

Teacher training and administrative leadership have already been discussed in this section. The use of telecommunications in teacher training is an emerging field with many possibilities. A leading expert in this area is Dr. Judi Harris of the University of Texas at Austin.

Dr. Judi Harris heads the Electronic Emissary project. This project establishes on-line relationships between teachers and mentors. The mentors are subject matter experts in the areas taught in most schools. Teachers were able to interact with subject matter experts in a variety of content areas. Results from the project are very encouraging. The Electronic Emissary project has shown that telecommunications is an effective medium for teacher training. A description of the project and its findings are shown in Appendix 1.

In addition to the use of telecommunications for teacher training, this medium can also be used to support children's education directly. Many schools are teaching children to use the internet as a virtual reference library and as a communications medium through the use of e-mail. Dr. Harris has extended the use of telecommunications in classrooms beyond simply accessing information on the internet and using e-mail. She has developed a variety of "telecollaborative projects." In these projects, teachers develop on-line courses in which their own students, and the students from other classes and other schools, can participate. Dr. Harris' framework for organizing and facilitating telecollaborative projects is shown in Appendix 1.

This section has shown that there is a conceptual and research base supporting the use of technology in education, and there are a variety of successful projects employing technology in education. Technology tools can enhance children's learning. The use of technology in migrant education is especially promising because it can help overcome the major obstacles to migrant children's educational success.

Is the Kentucky Migrant Technology Project Reaching Its Target Population?

- The target population includes two distinct migrant groups.
- A process is in place to identify and enroll eligible students from both migrant groups.
- The enrollment process was field tested during the 1997-98 program year.
- The Migrant School Locator, which will be implemented during the 98-99 program year, will contain a registry that documents student characteristics and the program's compliance with migrant eligibility guidelines.
- The project has a plan for expansion to other regions of Kentucky, thereby reaching a greater percentage of migrant students in the state, and to regions outside the state of Kentucky

The project's grant proposal (pp. 10 - 13) contains a succinct description of the target population:

> The target population for this project is **highly mobile migrant students** who are in **grades 1 - 12** in school, and **dropouts from ages 16 - 21**. While the scope of this project is focused on 27 districts, both within and outside of Kentucky, it is believed that a majority of Kentucky's districts, and therefore Kentucky's migrant population, will be impacted by the products and services created through this project.
>
> Over the past few years, Kentucky has a **steadily increasing number of migrant students** who are identified through school district migrant programs. During the 1995-96 year, **Kentucky had 22,013 migrant students**...of which approximately 89% were White, 5% were Hispanic, 5% were Black, and less than 1% were of another racial/ethnic group. Approximately 53% were male and 47% were female...Within Kentucky approximately **85-90% of migrant students move within the state**. The states outside Kentucky which migrant children most frequently move from and to are **Texas, Florida, Georgia, Indiana, Ohio, Tennessee, Illinois, and Missouri**.
>
> Although the Hispanic population represents a low percentage of the overall population, the number of Hispanic migrant children identified in Kentucky has tripled over the last three years and is expected to continue to rise rather rapidly.

Thus, there are two distinct groups of migrant students within the target population. One group consists of native born students whose primary language is English. This group migrates primarily within the state of Kentucky.

The second group contains students typically thought of as migrant, Hispanic students whose families' migration patterns are interstate. English is a second language for families in this second group.

During its first two years of operation, 1997-98 and 1998-99, the Kentucky Migrant Technology Project is focusing on delivering services within 11 school districts in Kentucky:

Region 1

1. Carroll County
2. Gallatin County
3. Oldham County
4. Owen County
5. Trimble County

Region 2

1. Eminence County
2. Henry County
3. Shelby County
4. Spencer County

Other

1. Bullitt County
2. Grant County

Within those 11 school districts, migrant programs during the 1995-96 school year had enrolled 1,334 migrant students:

- 79% were White, 19% were Hispanic, 1% were Black, and 1% were of other *racial/ethnic origin.*
- 57% were male and 43% were female.

The target population within these 11 districts is slightly different than the state as a whole:

- The number of families with interstate migrant patterns is higher than the state as a whole.
- The number of Hispanic families is nearly four times higher than the state as a whole.

The population of migrant students enrolled in school in these 11 districts is concentrated in the early grades:

- 47% in Grades K - 5.
- 17% in Grades 6 - 8.
- 8% in grades 9 - 12.

This indicates that increasing numbers of migrant students are dropping out of school as they reach the middle and high school grades. The statewide dropout rate for migrant students is 30%.

In addition to the high dropout rate of identified students, the migrant data for these 11 school districts also indicate that a number of migrant adolescents between the ages of 16 and 21 are not being identified for migrant services.

Finally, for those migrant students who are receiving services, most of the instructional services are being provided during the summer months rather than during the regular school year. Appendix A of the project's grant proposal, pages A - 1 through A - 6, contains a more detailed breakout of the educational data on the target population.

It is clear that there is a need for migrant services with the current 11 district region, and within the state of Kentucky as a whole. The services must target two groups: the students currently enrolled in some form of educational services, and the dropouts and potential dropouts.

How can the Kentucky Migrant Technology Project ensure that it is serving its target population? It must have an enrollment system that includes processes to:

1. Identify potential migrant students in the age range of 5 - 21 years of age.
2. Screen potential migrant students for eligibility to enroll in migrant services.
3. Document the characteristics of students who enroll in migrant education programs.
4. Compare actual enrollment with estimates of total numbers of migrant students in the service regions.

The US Department of Education outlines states' responsibilities for identifying migrant students in its *Preliminary Guidance for the Title I, Part C Migrant Education Program (page II - 3):*

> Each state is responsible for determining the number of migrant children residing within its boundaries. This can be a difficult task since the children who have the most need for services may not attend school. Furthermore, language and cultural barriers may make families hesitant to advocate for services on behalf of their children, particularly if they are not accustomed to looking for assistance from their child's school. Also, the locations where migrant families reside may change due to changes in agriculture or in response to natural disasters affecting crop production. Therefore, it is important that states actively seek out migrant families and develop comprehensive recruitment plans that include both school- and community-based activities.

How can a state document the number of migrant children residing within its borders? It hires local Migrant Recruiters whose job it is to know where migrant families live and to know when new migrant families move into their region. Migrant Recruiters make contacts with the employers of migrant workers in their area, with the local school system, churches, and other service agencies that may serve migrant families. They know the cycles of seasonal and temporary employment that draw migrant workers into the area.

Migrant Recruiters locate migrant families within their region and document their eligibility for services. Eligibility is based on four criteria. All four criteria must be met in order to be eligible for migrant education services:

1. The child has moved within the past 36 months.
2. The move was from one school district to another.
3. The purpose of the move was for the parent of the child, or the adolescent student, to obtain work that was temporary/seasonal and in the agricultural or fishing industry.
4. The work was an important part of providing a living for the migrant parent and his or her family.

It is the Migrant Recruiter's job to document these criteria on Kentucky's Certificate of Eligibility (COE). The COE becomes the determinant of whether migrant students are eligible for migrant education services. Appendix 2 contains more detailed information about the certification of eligibility for migrant services.

The Kentucky Migrant Technology Project used referrals from Migrant Recruiters to enroll students in its educational programs. The project relied on Migrant Recruiter referrals as evidence of student eligibility for services. During the 1997-98 program year, the project collected a minimal set of enrollment data on students who participated in their services. The enrollment data showed that:

- The total number of students for the first year of operation was 160. 141 students were active at the end of the 1997-98 school year; 19 had moved from the service area.
- 37% of the children served spoke English as their first language; 63% spoke Spanish as their first language (data available for 106 children).

- 68% of the students were ages 4 to 9 years; 24% were ages 10 to 15 years; 8% were age 16 years or older (data available for 95 students).
- 32% of students were in pre-kindergarten or kindergarten; 38% were in grades 1 - 3; 21% were in grades 4 - 6; 6% in grades 7 - 9; and 3% were in the 10th grade (data available for 89 students).
- 47% of the students were female; 53% were male (data available for 106 children).
- Students from 20 schools were involved in the project.
- A total of 44 parents/families participated in the project during the first year: 15 Latino, 11 PACE, and 18 Student/Family Coordinator.
- A total of 84 teachers participated in the project.
- Two community-based organizations were involved in the first year of operation: the Latino Center in Shelbyville and the PACE program.

A listing of enrollment data for students is shown in Appendix 2.

In Years 2 - 5 of the project, a more extensive set of data will be collected. The data from the Certificates of Eligibility will be entered into the Migrant School Locator registry database and be available to document the eligibility of enrolled students. A more comprehensive set of enrollment data will be collected for each family and stored in the registry.

The external evaluator has developed a set of questions related to the development of the Migrant School Locator. The questions center around the types of data to be included in the registry, collection of the data, entry of the data into the registry, control of access to the registry data, and the report generating capabilities of the registry.

Registry content questions:

Will the registry contain all of the information gathered for the Kentucky Migrant Education Certificate of Eligibility (children's names, sex, birthdate, race, birthplace, grade, and student number; family data; eligibility data; name of certification coordinator or advocate; name of recruiter; qualifying activity; location moved from; destination of next move)?

Will the registry contain student data such as: name of school attended, date of enrollment, date of exit, attendance data (days enrolled, days attended, rate of attendance), academic grades, ratings of conduct, test scores, referrals for special services, awards, participation in extracurricular activities, disciplinary actions?

Will the registry contain student work samples? If so, what will be the criteria for selection (who will select them; what subject areas will be sampled; what types of media can and cannot be included)? Will a chronological collection of work samples be maintained over time, or just current ones?

Will the registry contain family information such as: income level, primary language spoken in the home, levels of language proficiency of family members, educational background of parents (level of education, country where education was received), average

number of moves per year, reasons for moves, types of jobs that parents take, family knowledge of and access of services (social, educational, health, occupational), parental expectations for themselves and their children (educational, occupational).

Will the registry document the language capabilities of children and their parents?

Will the registry contain an audit trail of moves that families make over the course of the project's remaining four years of funding?

What form will identification codes take? How will they be assigned to children, parents, and families? Will they be coordinated with other states where families move? Will everyone use the same code for each family?

Will the registry contain data tracking student time on task and achievement in the services delivered by the project: CD ROM thematic units, computer-based language instruction for ESL students, computer-based instruction in academic areas for all students, and telecommunications activities.

Will we be able to store other evaluation data in the registry (results of ESL pre/post testing; results of computer attitude surveys; ratings of family support for education)?

Data collection and data entry questions:

Who is responsible for ensuring that all of the specified data for each student is collected?

Who is responsible for checking that each certified migrant student is entered into the migrant registry?

Who is responsible for the entry of data into the registry in general, and specifically for the following types of data: Certificate of Eligibility? Other demographic information? School information such as attendance, grades, test scores, awards, referrals for special services, disciplinary actions, etc.? Student work samples?

In the case of student work samples, what will be the criteria for selection? In what form will they be stored? Will the samples be put into some type of interpretive context (e.g. labeling a student writing sample as "novice" according to Kentucky's protocol) or simply be available for interpretation by the receiving school's administration and teachers?

Who is responsible for updating student data as it changes? How often will the data be updated?

Registry access questions:

What are the qualifications for gaining access to the registry?

Who will be responsible for granting access to the registry?

Will there be levels of access according to the level of data requested?

Is there a process for determining when a student's record has been accessed (date, by whom)?

Is there an instruction/reference manual, in print or on-line, to guide users of the registry.

Will technical assistance be available on-line for questions about use of the registry?

Will users be charged a fee for access to the registry?

Data analysis and report generating capabilities:

Can Boolean searches be performed with the data in the registry? If so, which data will be accessible to the search engine? How many variables can be included in one search string? Can searches be embedded? If so, how many levels deep?

Can raw data from registry searches be exported into other software programs (standard statistical packages such as SPSS or SAS; databases and spreadsheets).

Can the registry access statewide migrant data? If so, can the data be accessed by individual school district for the purpose of comparing total migrant population with Migrant Technology enrollment in that district?

Will there be access to state data for the purpose of drawing randomized samples of students for control groups?

Are there standardized report formats? If so, what are they? Is there an option to create customized reports?

Can reports be printed directly from the registry? Can reports be exported to word processing software programs?

The Kentucky Migrant Technology has successfully completed its first year of implementation, serving 11 school districts. In Year 2, the 11 existing sites will be maintained and the Migrant School Locator will be brought on-line. The Migrant School Locator will be a major addition to the project.

Plans for expansion during Years 3 - 5 include:

Year 3: Four new sites (two in state and two out of state).
Maintain the original 11 sites.
Internet Registry access approved to sites nationwide.

Year 4: Six new sites (three in state and three out of state)
Maintain the 15 existing sites
Internet Registry access approved to sites nationwide.

Year 5: Six new sites (three in state and three out of state)
Maintain the 21 existing sites.
Internet Registry access approved to sites nationwide.

A copy of the project's expansion plan is shown in Appendix 2.

Is the Kentucky Migrant Technology Project Delivering the Required Services?

- Direct services were provided to students in school settings. The services included tutoring and small group instruction.
- Staff provided assistance in the use of the ALS system of computer assisted instruction.
- In collaboration with a local Latino community center, services were provided to students and families.
- In collaboration with the Migrant Education Even Start Program, the project engaged migrant families in a variety of learning opportunities involving technology.
- The project provided training for teachers and administrators to work more effectively with migrant students.
- The evaluation system documented service delivery. Areas for improvement in service documentation have been identified.

Four types of services were delivered through the Migrant Technology Project during the 1997-98 program year:

- Direct instruction with students.
- Migrant Tech teacher support for computer assisted instruction with the ALS system.
- Instruction delivered by collaborative partners.
- Staff development and other forms of orientation to the Migrant Technology Project.

Direct Instruction With Students

Migrant Technology teachers provided direct instruction with students in the form of individual and small group tutoring. Teachers' service logs documented contacts with 92 students. A third of the students had 1-2 contacts with the Migrant Technology teachers. Another third had between 3 and 7 contacts. The final third had between 8 and 18 contacts.

The average contact was 48.18 minutes in length with a standard deviation of 22.27 minutes. This means that 68% of the contacts were in the range of (48.18 + 22.27) minutes to (48.18 - 22.27) minutes, or within one standard deviation from the mean. 96% of the contacts fell within the range of two standard deviations from the mean. Table 3.1 shows the average duration of contacts for students with different numbers of total contacts with Migrant Technology teachers.

Table 3.1
Total Teacher Led Instructional Contacts Per Child

Contacts	No. Children	Avg. Minutes/Lesson	Standard Deviation
1	22	48.45	22.61
2	10	43.65	9.73
3	5	54.33	24.80
4	6	67.04	33.03
5	2	27.50	1.50
6	5	47.67	28.59
7	9	39.25	6.35
8	8	39.13	7.57
9	4	42.36	11.50
10	5	36.30	5.89
11	4	53.18	21.25
12	3	37.17	2.62
13	3	61.95	20.69
14	1	94.64	0.00
15	0	--	--
16	2	102.19	4.69
17	2	45.29	13.24
18	1	45.46	0.00
Total	92	48.18	22.27

Tables 3.2 and 3.3 on the following page show the contacts reported separately for the two Migrant Technology teachers. Data for four students were missing teacher identification.

Table 3.2

Teacher Led Instructional Contacts Per Child: Teacher EPL

(omitted in this version of the evaluation report)

Table 3.3

Teacher Led Instructional Contacts Per Child: Teacher ESL

(omitted in this version of the evaluation report)

Questions that emerged from examination of the service data included:

1. Are students receiving enough instruction with the technology to enable them to use it independently, without teacher assistance?

2. Are classroom teachers receiving enough training to use the technology themselves, and to support their students' use of technology?

3. Is the Migrant Technology Project the primary source of ESL instruction for its bilingual students? If so, should it continue to serve this function?

As in all first year evaluations, there were some areas in this evaluation in which data collection can be improved. Some recommendations for improvement in the collection of the service data include:

- Enter first and last names on the service record forms. Some forms this year contained an initial or just first name.

- Use the same names for students consistently. Some forms contained a student's formal name one time and a nickname or different name known to teachers and parents at other times.

- Record student and teacher names separately, so they are easily discernible. Some of the data forms combined teacher names and student names in the documentation of small group activities. We want to be able to separate out services provided to teachers and those provided to students.

- Enter contact time in minutes, rather than decimals for hours. Some forms contained incorrect decimal equivalents.

- There were many students listed on the Service Logs who were not listed in the End of Year Student List in the Annual Performance Report. Cross check these lists.

Computer Assisted Instruction With the ALS System

A central component of the original plan for the Migrant Technology project was the ALS System. This computer-based instructional system provided lessons for students ranging from early elementary grades through high school. At the end of the 1997-98 program year, ALS data were available for 97 students.

The majority of students completed fewer than twelve lessons on the ALS system:

- 58% of students completed 12 or fewer lessons during the 1997-98 program year.
- 29% completed 13 to 39 lessons.
- 13% completed 40 or more lessons.

Only 6 of the 97 students completed more than 80 lessons on the ALS system. Those students completed 84, 90, 105, 114, 148, and 149 lessons respectively.

Table 3.4 shows the range of lesson completion, average minutes per lesson for different levels of intensity, and average scores and standard deviations of scores for different levels of intensity of use of the ALS system.

Table 3.4
Intensity of Service for ALS Lessons

Total Number of ALS Lessons	Number of Students	Avg. Minutes Per Lesson	Avg. Score Per Lesson	Score Std. Dev.
1 - 3	19	14.30	77.63	32.22
4 - 6	9	14.01	96.93	3.09
7 - 9	15	20.86	93.93	5.71
10 - 12	13	16.33	90.77	7.21
13 - 15	7	14.31	85.86	8.25
16 - 18	7	10.81	90.71	10.07
19 - 21	4	14.69	90.00	8.86
22 - 24	2	12.74	87.00	4.00
25 - 27	2	7.71	81.50	9.50
28 - 30	2	10.54	90.00	1.00
31 - 33	3	17.77	80.67	6.55
34 - 36	1	16.32	99.00	0.00
37 - 39	0	--	--	--
40 - 42	1	13.20	89.00	0.00
43 - 45	1	9.00	94.00	0.00
46 - 48	3	13.54	93.33	1.70
49 or more	8	13.37	89.63	5.05
Total	97	15.04	88.30	16.66

Questions and comments that emerged from examination of the ALS data included:

1. There seems to be an overlap between the service hours recorded earlier in this section, and time on task recorded in this section for the ALS system. In some cases, ALS time was counted twice--once on the teacher service record, as she introduced the ALS system to students individually and in small groups; and again, as the ALS system documented student time on task. In other cases, ALS time on task was not documented in Migrant Tech service logs because students worked on the system when the teachers were not present. We need to develop a more discrete system for documenting time on task and avoiding double counting of hours.

2. Interviews with staff indicated that students would continue to do the same ALS lessons over and over again, until they achieved a high score. The ALS system would record the most recent score, rather than the history of interaction with the lesson. Students focused on passing the tests, rather than on learning the material in the lessons. Is there a way to do an audit trail of actual time on task with the ALS system. For the development of new computer-based instruction for the 1998-99 program year, this should be a consideration when developing the tracking component.

3. Total amount of student time on the ALS system was too low to have a significant impact on academic achievement for the majority of students.

3. Staff and student anecdotal reports indicated that students became bored with the ALS system after working with it for a few days or weeks. The system did not contain sufficient variety in lessons to hold student interest for the long term.

According to the program coordinator, the program plans to decrease use of the ALS system in the future. The experience with ALS, however, raised some general questions about technology use that are applicable to project planning.

4. Do migrant students in this project have regular access to the technology? If not, what are the barriers? There has been a concern expressed on the Migrant Technology Listserv that we need to study the issue of access more systematically.

5. When migrant students do have access to the technology, do they choose to use it? If so, in what ways?

6. Is the technology being integrated into the regular classroom curriculum? Does technology support student learning in content areas, or is it viewed as something separate from the regular curriculum?

7. Is the technology being adapted to the specific needs of the migrant students?

Recommendations for improvement in the collection of ALS data include:

- Use student's name - not a code number. There were discrepancies when both were matched later.

- Enter student's name identically in all reports (Hispanic last names varied).

- [School Name] "Average Time per Lesson" amounts were incorrect. Review software report function for bugs.

- There were 2 to 3 partial reports, covering overlapping time periods, on many students:

  (list of student names)

  Submit 1 End of Year Progress Report per student.

- Two students were listed as attending both ------- County Middle School and ------ County High School - need one total page for these also:

  (student names)

- There were many students listed on Progress Reports who were not listed in the End of Year Student List in the Annual Performance Report:

  (list of student names)

- Also need one total page for students who have moved from one school to another. Examples: (student names)

Instruction Delivered by Collaborative Partners

One of the collaborative partners for the Migrant Technology project was the Centro Latino. Located in Shelbyville, Kentucky, the center provides support services for Hispanics, many of whom are workers in local tobacco and horse farms. The center fills a gap left by the lack of social services for migrant workers. Employment services, housing assistance, health care referrals, English classes, emergency food and clothing assistance, and Spanish language masses are some of the services offered by the center.

The Migrant Technology program is providing the center with computers and technology training for staff and participants. A consultant from the US Department of Education, working in collaboration with the Migrant Technology Project, did a workshop on using the internet at the Latino Center. Plans are to expand the collaboration with the center during the upcoming program year.

An article in the Louisville Courier Journal newspaper (7/20/98) cited evidence supporting the need for services for Latinos in Kentucky:

- The number of Spanish-speaking migrants and immigrants in Kentucky is unknown, but growing.
- In 1997, 2402 legal immigrants came into Kentucky under the US Department of Labor's H-2A Program. The H-2A Program allows migrant workers to come into the United States and work on farms for one growing season. There were 25,000 migrants in that program nationwide in 1997. The number is expected to increase significantly in 1998.
- Other migrant workers are in Kentucky legally under long-term work permits, known as green cards.
- The number of migrant workers, legal and illegal, continues to increase yearly in Kentucky. Localities are having to adapt to this trend. The city of Shelbyville has hired a bilingual translator to serve as a liaison between migrants and city government. Police officers in Bowling Green are taking Spanish lessons, in order to communicate with the growing Hispanic community. Churches in Lexington, Shelbyville, and Georgetown are offering Spanish language services.

A copy of the Courier-Journal article is shown in Appendix 3.

Collaboration with the Latino Center allows the Migrant Technology project to reach out into the Hispanic community. Questions and comments related to the collaboration with the Latino Center include:

1. Are the staff at the center open to learning the technology? Will they have the skills and motivation to promote the use of technology with participants at the center?
2. Is participation at the center consistent enough for students to learn the technology?

A second major collaboration was formed with the OVEC Migrant Education Even Start (MEES) program. This collaboration was successful in delivering joint services in several areas:

- Migrant Tech and MEES staff have made joint home visits to families that are in both programs. We carry out the adult education and the parenting and migrant tech works with the school age children on academics and then they introduce the entire family to an array of educational software based on the needs of the family.

- Migrant Tech and MEES staff participated in various activities on the mobile learning center (MLC). The MLC is utilized to make home visits in areas that the home is not conducive to educational instruction, it has been used outside elementary schools and migrant tech parents work on their adult education, ESL and then the students are brought on board for instruction. In addition, the parents are then taken into their child's school to tour, meet the teacher, volunteer, etc. Schools have been receptive to the MLC because it brings the migrant tech parents into the school. Migrant Tech and MEES also collaborated on RIF book distributions for the migrant children.

- Migrant Tech put several laptops on the MLC and they have provided us with software to utilize with migrant families. They also coordinated several staff development sessions training staff on several different pieces of software.

- Migrant Tech and MEES coordinated summer technology classes for children and adults. Adults were taught basic computer and keyboarding skills. Parent child activities were also a focus of this training. Some classes were taught on the MLC, outside under the awning, in computer labs, etc. Migrant tech often supplied multiple laptops and printers for this joint training.

- Migrant Tech and MEES staff shared information about participating families and provided referrals to each other.

This appears to be a very strong collaboration. The two programs have shared resources and jointly delivered services to the migrant population. This made for a more cost efficient delivery of services, amplifying the effect either program could have if trying to deliver all of these services individually.

The data for the MEES evaluation are currently being coded and analyzed. A copy of the findings for Migrant Technology students who participated in the MEES program will be included in the MEES evaluation report, available in October of 1998.

There is a second MEES program in Kentucky, based in Madison County. The director of that program has expressed interest in collaborating with the Migrant Technology project as it expands. Contact information has been given to the project coordinator.

Staff Development and Orientation to the Project

In addition to direct services, computer assisted instructional services, and the services provided through collaborators, the Kentucky Migrant Technology Project provided a variety of teacher trainings over the course of the first year of operation. Examples of the range of training are

shown below. A more complete list of training dates, locations, and agendas is shown in Appendix 3.

Trainings were conducted in the following areas:

- Introduction to the Migrant Technology Project.
- KIRIS Test Preparation Software preview.
- Use of the ALS software.
- Use of the digital camera.
- Judging the Young Author contest.
- Accessing and using the internet.
- PowerPoint presentations overview.
- Using CD-based content from the internet.

Questions and comments related to staff development and orientation sessions conducted by Migrant Technology staff:

1. The presentations have been effective in introducing technology tools to teachers and school administrators during this first year of program operation.

2. What do we know about the effect of the presentations? Can we do a follow-up to determine if any of the participants have increased their use of technology?

3. Is there an overall goal for the training component of the project, beyond increasing awareness of technology tools for education? The answer to this question is an obvious "yes" for some of the strands, but the answer is not apparent for all of the strands. Would it be helpful to develop goals and objectives for the training component and to develop an evaluation process to assess its effectiveness?

4. Would it be useful to use the diffusion information in Section 1 of this report as a framework for assessing the training component?

Documentation of Service Delivery

The coordinator of the Migrant Technology project implemented an internal monitoring system as part of his overall project management. The monitoring process documented service delivery and collected the information needed to make decisions about the project. Several types of information were collected:

- Weekly Plan & Service Logs
- End of Month Office Staff Reports
- Staff Anecdotal Records
- Project Coordinator's Logs
- Annual Performance Report
- Migrant Tech Newsletter

The Weekly Planning and Service logs provided documentation of service delivery that was summarized earlier in this section.

End of Month Office Staff Reports were completed by five of the seven staff members who worked during the 1997-98 program year: two curriculum specialists, technology specialist, interpreter, and secretary.

These five staff members completed monthly reports which included comments about major accomplishments, attendance at conferences and meetings, their current projects, and special comments about the project. The other two staff members, both of whom were student /family educators, completed monthly anecdotal notes. Table 3.5 summarizes the number of comments/notes received from each staff member in each area of reporting.

Table 3.5
Staff Documentation of the Project
12/97 through 5/98
(No. of Monthly Comments)

Staff Member	Major Accomps.	Confs. Meetings	Projects	Special Comments	Anecdotes
01	5	4	5	1	--
02	6	5	6	6	--
03	5	4	5	1	2
04	--	--	--	--	4
05	6	6	6	5	--
06	6	6	6	6	--
07	--	--	--	--	2

Content analysis of the comments showed that they were fairly brief and contained a limited amount of information for the time period covered.

In the area of Major Accomplishments, five staff members completed a total of 28 monthly comments. The average length of a comment was 34 words. The content of these comments was a listing of accomplishments for the month. The average comment listed 3.57 accomplishments.

The Conferences and Meetings category asked staff to list attendance at professional functions. Five staff members completed 25 monthly comments in this area. Comments showed an average monthly attendance at 1.76 meetings.

The Projects category asked staff members to write monthly notes on their current projects. Five staff members completed a total of 28 comments in this category over the six month recording period. The average number of projects listed per comment was 2.79.

The Special Comments category allowed staff to write notes about how the project is developing and about their role in the project. Five staff members wrote 19 comments during the reporting period.

A content analysis of the comments, using themes as the unit of analysis, separated comments into content units. Some comments contained one content unit, or one thought. Other comments contained two or more different thoughts.

Content analysis showed that the 19 comments contained 43 separate content units, or an average of 2.26 content units per comment. The units were analyzed according to theme. The analysis showed that there were four main themes expressed across the comments. Staff's feeling about the project was the most common theme, mentioned 19 times. The themes and number of times they appeared in comments are shown below.

Staff Feelings About the Project (19 content units)

Ten of the comments contained content related to staff reflections on how the project has evolved. All ten comments expressed positive feelings about the accomplishments of the project. For example, "I was very pleased with the Washington visit."

Four of the comments contained feelings about current aspects of the project. All were positive. For example, "Project is very challenging and rewarding."

Five comments expressed feelings about the future of the project. All were positive. For example, "I am especially excited about designing and presenting the KIRIS Test Preparation Unit at the OVSO meeting on Jan 26."

Evaluative Comments (12)

Staff made evaluative comments about the quality and/or effectiveness of various aspects of the project. All but one expresses positive judgments of how the project was working. The comments covered topics such as training, hardware, software, self-performance, performance of other staff members, leadership by the project coordinator, and products developed by the project. The one non-positive comment contained a suggestion for increasing the amount of preparation time allotted for development of materials for conference presentations.

Staff Report of What They Did on the Project (9)

This category contained self-reports of staff activities.

Personal Contextual Information (3)

One staff member include contextual information for reporting in monthly comments. This type of information can be very helpful in interpreting the comments.

Anecdotal Notes were completed by three of the staff members: the interpreter and the two student/family educators. These three staff completed a total of 8 anecdotal comments during the six month reporting period.

The anecdotal notes were content analyzed, using themes as the unit of analysis. One of the notes contained three themes. Three notes contained two themes. The other four contained one theme each. All of the notes centered on teachers' and students' use of computers. The notes contained contextual information that helped the reader understand the meaning of the comment.

The small data set found in the anecdotal notes showed consistency in the themes--computers are being integrated into some of the school settings and children have developed positive attitudes toward the use of computers. It is not known at this time if these comments are representative of the project's influence in general.

Table 3.6
Average Length of Staff Comments and Anecdotes

Area of Comments	Number of Comments	Total Words	Average Words per Comment
Major Accomplishments	28	946	33.79
Conferences and Meetings	25	560	22.40
Projects	28	688	24.57
Special Comments	19	601	31.63
Anecdotal Notes	8	823	102.88

The full text of staff comments and anecdotal notes is shown in Appendix 3.

Questions and comments related to the internal monitoring system include:

1. This system is effective in documenting staff attendance at meetings and conferences and in providing some description of current projects and main accomplishments. Overall, however, the system is yielding little information about how the project is evolving and how decisions are made within the project. This may not be a goal of the internal monitoring system, but it is a need for the evaluation and we should be able to address it through small adaptations to the internal monitoring system.

2. There seems to be little continuity between related comments (e.g.; major accomplishments and projects) and between categories of comments over time (e.g.; a project noted during one time period should show some connection with major accomplishments in later periods).

3. Observation of the project by the external evaluator showed that much information is shared verbally by staff members throughout the day. When the project first began, all of the staff and the director were working in one large room together. There was an on-going dialogue during that time that kept everyone informed of each other's work. The move to the new OVEC offices, according to staff members, has hindered this free discussion among staff because of the physical setting--staff work in cubicles, and the director and webmaster are in an office. Observation of the setting, however, showed that staff still engage in many informal meetings during the day and continue to share information verbally. The exchange may not be as free as before, but it still continues. There is a rich dialogue among staff that informs the development of the project. At this point, however, we are not capturing that information. We need to be able to document how the model has evolved.

4. Can we add a component to the process where staff send anecdotal notes and special comments to the project evaluator by e-mail on an on-going basis? Messages could be copied to the project coordinator, or to all staff if desired. This would accomplish two things. First, it will encourage staff to shift from paper and pencil record keeping to the use of a technology tool for this activity. Secondly, it opens the possibility for a dialogue, rather than the current one-way communication from staff to project coordinator and evaluator. Both actions will model with the staff what we are trying to accomplish with program participants--increasing the authentic use of technology for

daily tasks and the development of virtual communities with seamless two-way communication.

5. Should the other staff reporting requirements be shifted from paper and pencil forms to computer-based forms of reporting? This would make staff practices more in line with the stated purpose of the project, to explore ways of using technology.

6. Do staff members write yearly professional goal statements? If so, is there a plan for obtaining the resources and training needed for accomplishment of the goals?

A copy of the coordinator's management plan is shown in Appendix 3. Also shown in Appendix 3 is an audit list of internal monitoring documents submitted for analysis by the external evaluator.

A final source of information about how the project evolved is found in the project coordinator's handwritten notes. His notes provided an audit trail of the project's development and contributed contextual information for understanding decisions made in the project. The same questions posed above apply here, also: Can this practice be shifted to computer-based text? Can the notes be transmitted to the external evaluator on a monthly basis? Is there a subset of these notes that can become part of a virtual dialogue among stakeholders?

The answer to the final question is "Yes." The process was initiated this program year through a teleconference and follow-up e-mail between the federal consultant for the migrant technology grants, and the project director, coordinator and evaluator. The process was limited to a set of focus questions. The e-mail exchange produced more information during this trial run of the process. In the future, expansion of the discussion set should be explored.

Is the Kentucky Migrant Technology Project Achieving Its Intended Outcomes?

- The focus of the first year of operation was on implementation of the program model. The data collection system for student outcomes was field-tested. Data from the field tests documented student time on task and pre/post gains in academic achievement.
- Results of the field tests have informed revisions to the system for documenting outcomes.
- Outcomes for all program goals and objectives will be fully measured and statistically analyzed in the Year 2 evaluation report, due August of 1999.

The project's focus for 1997-98, the first year of the grant was implementation of the program model. During the first year, many adaptations have been made to improve the model's ability to address the project goals and to address the needs of stakeholders. Section 1 described those adaptations.

This section will describe the project's goals and objectives, the system for evaluating the project's progress in those areas, and questions that should be answered during the second year's implementation of the project.

Goal 1: To help migrant students achieve to high academic standards.

This goal proposes that the use of technology will enhance migrant students' levels of academic achievement. In order for technology to have that kind of influence, several things must take place: students must become comfortable with the technology, they must interact with the technology-based instruction on a regular basis, and they must receive support for academic achievement from their family and social systems.

The project has developed objectives to support accomplishment of this goal. This section will describe the objectives and the conditions that are needed to achieve them.

Objective 1.1:

By the end of Years 2, 3, 4, 5, to make a statistically significant increase in teachers', teachers' aides, and students' comfort level and skills in using technology to support the learning of the targeted migrant students, as evidenced by teacher and student surveys, usage of logins, and project staff observations.

Content analysis of teacher anecdotes for the 1997-98 program year showed that a group of targeted students developed positive attitudes toward computers. The students saw the computers as tools to accomplish authentic tasks.

As mentioned earlier, the sample was small and purposefully selected. Therefore, these results can only be seen as promising indicators that the project actually helped the majority of the participants to develop a comfort level and skills with computers. The results cannot be generalized, however, to the entire group of participants.

Anecdotal notes are a useful way to collect rich, contextual information. By themselves, however, they are not an effective way to assess systematic changes across large groups of participants. The project needs to add a measure that is suited to this purpose.

A review of the literature showed that most studies in educational settings used Brenda Loyd's Computer Attitude Scale (CAS), or an adaptation of the CAS. The CAS was developed as a research tool in university settings. It was normed on groups of college students--highly educated, highly literate, native born, English speaking young adults. The CAS has no validity for the migrant technology project.

Experts in the areas of technology (Judi Harris) and migrant education (Martha Meacham) were consulted to inform the development of a valid instrument for this area. The question

was also posed to an evaluation listserv that includes many of the top measurement experts in the field of evaluation.

The consensus was that self-report measures would be the most efficient for this type of project, but that traditional pre/post methods of obtaining the data are problematic. Computer users are novices when assessing their own skills and comfort levels on the pretest. They have moved beyond novice status by the time of the posttest. They are using a different set of mental benchmarks when doing a self-assessment on the posttest.

To overcome this measurement problem, it is recommended that the project use retroflective pretests with posttests at the end of the 1998-99 program year. This method asks respondents to answer reflect back and assess attitudes and skills at the beginning of the year, and to assess current attitudes and skills. In this way, the same mental benchmarks are used for both pretests and posttests.

To supplement this method, it would be helpful if students completed anecdotal notes at the beginning of the school year documenting: previous experience with computers, previous experience with software, previous experience with the internet, and current comfort level with computers. This information can be collected through student writings or through a more formal instrument. An example of an instrument for this purpose is shown in Appendix 4.

Objective 1.2:

By the end of Years 2, 3, 4, 5, to make a statistically significant increase in academic achievement in the core subject areas by the targeted migrant students, as evidenced by assessments integrated into on-line modules of instruction, teacher-administered assessments, student self-assessments, and by the student's electronic portfolio.

On-Line Modules of Instruction

These modules are still in development. It is recommended that the external evaluator participate in the development of the assessment component of the modules.

Teacher-Administered Assessments

This information will be gathered from students' cumulative records and stored in the Migrant Registry. It is unclear at this point who will be responsible for this task.

Student Self-Assessments

The external evaluator will design age- and grade-appropriate assessments using the retroflective pre/post ratings method described above. The assessments will be designed to complement the assessments for on-line modules of instruction and information gathered from teacher assessments.

Student's Electronic Portfolio

This will be stored in the Migrant Registry. It is recommended that the external evaluator participate in the development of this component, to ensure that the portfolios are designed to gather data in a valid and reliable fashion.

Objective 1.3:

By the end of Years 2, 3, 4, 5, to make a statistically significant decrease in the dropout rate among the targeted migrant students, as evidenced by the dropout tracking component of the project's migrant registry.

We will use state migrant education data to provide a baseline for the dropout rate. The dropout tracking component of the Migrant Registry will collect data on dropouts for the 1998-99 program year, pending implementation of the registry. The external evaluator will analyze this data and report the statistical significant of the change in dropout rate.

Objective 1.4:

By the end of Years 2, 3, 4, 5, to make a statistically significant increase in the number of migrant dropouts who reenter school or get a GED, as evidenced by school admission records, GED preparation and graduation records, and the dropout tracking component of the project's migrant registry.

We will use state migrant education data to provide a baseline for the rate of school reentry and GED completion or high school graduation. The Migrant Registry will supply student information on dropout and school reentry, GED completion and high school graduation. The external evaluator will analyze the data from the Migrant Registry and report the statistical significance of the school reentry rate of dropouts and for those who complete GED's or graduate from high school.

Objective 1.5:

By the end of Years 2, 3, 4, 5, to make a statistically significant increase in the number of migrant students' parents who become involved with their children's education, as evidenced by the parent involvement scale in the project's migrant registry.

Scales to measure migrant parents' involvement in their children's education were field tested with the students in the Migrant Education Even Start program during the 1997-98 program year. Two scales were used: End-of-Year Rating Scales completed by parents and Parent Participation Scales completed by teachers.

The Parent Participation Scales asked teachers to rate how well a family's home environment supported children's development and to what extent parents' interactions with children were supportive of children's development.

The End-of-Year Rating Scales contained items that measured parents' involvement in children's schooling and expectations for children's future success in schooling.

Both scales worked effectively. Both involve retroflective pre/post ratings, so the scales are administered at the end of the program year. The scales should be administered for all Migrant Technology participants during the 1998-99 program year. The ratings can be added to the data stored in the Migrant Registry. The external evaluator will train the staff to use the instruments in spring of 1999.

Goal 2: To promote greater continuity of instruction for migrant students.

This goal proposes that the use of technology will enable schools to provide greater continuity of instruction for migrant students. Toward that end, the project is developing a Migrant Registry. The registry will contain student demographic data, school attendance information and grades, and student work samples. The registry will be internet-based and accessible to school personnel with access codes. The registry will enable school personnel to access migrant students' records at the time they enroll in school. Access to attendance, grades, and work samples will enable schools to plan appropriate grade/class placement and instruction for migrant students.

The objectives supporting accomplishment of this project goal are shown in this section. A discussion of each objective is presented.

Objective 2.1: Enrollment

By the end of Years 2, 3, 4, 5, 80% of students in the registry who move to another district in the state or outside the state will enroll in a new school following the move through assessing our new web-based registry or contacting project staff, as evidenced by confirmation of student enrollment at the new school.

The external evaluator will analyze the data on school reentry that is tracked in the Migrant Registry. The rate of reenrollment will be reported.

Objective 2.2 Appropriate placement

By the end of Years 2, 3, 4, 5, to make a statistically significant correlation between instructional needs documented in the student's electronic cumulative folder in the project's migrant registry and the instructional plan developed in the new school placement, as evidenced by the new school's registry access and contact with the sending school, and the corresponding placement plan developed for the student.

Instructional Needs

As mentioned earlier, the external evaluator should be involved in the design of the student portfolio component of the Migrant Registry. For example, the design of the instructional needs section will determine the usefulness of the data for statistical analysis. The level of data (ordinal, interval) that is gathered in that section will determine the statistical tests available for analyzing the data.

Instructional Plan

Will receiving schools be requested to develop an instructional plan? If so, will a format for the plan be provided?

If receiving schools follow a protocol for development of instructional plans, the validity of comparisons with Migrant Registry data will be increased. The external evaluator can help in the design of protocols for instruction plans that can be correlated with the instructional needs section of the Migrant Registry.

Objective 2.3: Appropriate instruction

By the end of Years 2, 3, 4, 5, 60% of receiving schools will utilize the student's electronic portfolio to match the student's program of instruction with his/her ability level as shown in the portfolio, as evidenced by follow-up documentation showing the receiving school's use of the electronic portfolio, such as phone verification, letter, or survey of usage.

The external evaluator will analyze the school utilization data and report the findings on rate of usage of the student's electronic portfolio, the correlation between ability level shown in the portfolio and the receiving school's program of instruction. Protocols for assessing the ability levels of programs of instruction will be developed by the external evaluator in consultation with curriculum experts. It is assumed that the Migrant Registry will be able to document access to student portfolios. (authorization code of access, and number of times a portfolio is accessed).

Appendix 1

August/September 1994 "Mining the Internet" column, The Computing Teacher

[Electronically reprinted with permission from *The Computing Teacher* journal, published by the International Society for Technology in Education.]

The Electronic Emissary: Bringing Together Students, Teachers, and Subject Matter Experts

by Judi Harris

By the time that you read this sentence, there will probably be more than 60 million people worldwide with access to global electronic mail. Many of these millions are subject matter specialists whose knowledge encompasses a wide spectrum of expertise. What if connections could be made so that volunteers from among this group could communicate directly with students and teachers who are studying about the experts' specialties? This article will describe a service that helps to form those connections.

Students and teachers of the Information Age need to be able to make connections outside the geographic and temporal bounds of their communities. Their mentors should include subject matter and pedagogical experts from both down the hall and around the globe. Fortunately, a networking system that can facilitate these asynchronous connections between mentors and mentees already exists. It is an international network of networks called the Internet.

The Internet offers an awe-inspiring array of informational resources to account-holders, such as interactive access to databases, text-based virtual realities, and university library catalogs. In addition, thousands of Internet sites maintain archives of anonymously accessible text files. Many sites also offer opportunities for account-holders to interact with each other through public discussion groups conducted via electronic mail or distributed conferencing systems. Such interpersonal resources are among the most powerful and promising for use in K-12 education, because they can assist professionals in forming and maintaining cross-disciplinary, inter-institutional working relationships. What is needed is a way for people working in different disciplines to find each other on the Internet so that collaborations can be planned. In a sense, an *emissary* is needed to bring collaborative teams together.

Webster's Third New International Dictionary (Gove, 1986) describes an emissary as:

> *an agent or representative usually empowered to act more or less independently (as in collecting or conveying information or in negotiating); a messenger (p. 742).*

An "electronic emissary" would help teachers by locating Internet account-holders with subject matter expertise relevant to their curricula who are willing to volunteer some of their time to share their knowledge via electronic mail. The same "electronic emissary" would help subject matter experts ("SMEs") by coordinating requests from classroom teachers so that the experts' generosity is not repaid with an avalanche of pleas for communication. Finally, a service such as this would help students by enabling them to communicate directly with subject matter experts from all over the world.

The Project

Such a service exists. The *Electronic Emissary Project* is a new type of Internet-based interpersonal resource that has been piloted during the 1993 and 1994 spring semesters, and is currently being expanded. It is based at the University of Texas at Austin, in the College of Education. The Emissary is a "matching service" that helps teachers with access to the Internet locate other Internet account-holders who are experts

in different disciplines, for purposes of setting up curriculum-based, electronic exchanges among the teachers, their students, and the experts. In this way, the interaction that occurs among teachers and students face-to-face in the classroom is supplemented and extended by exchanges that occur among teachers, students, and SMEs asynchronously via electronic mail.

Several examples of such exchanges from past semesters of Emissary-arranged matches follow.

- Fourth grade students in Fort Worth, Texas and middle school students in Menomonee Falls, Wisconsin communicated with an astronomer and planetarium coordinator from Louisville, Kentucky about the origin of the universe, the birth, life, and death of stars, constellations, the solar system, black holes, the use of the sun as an energy source, the moon, Mars, and current auroral activity.
- Fifth grade students in Council, Idaho who were studying animal behavior received suggestions on how to improve their observation techniques from a primate ethologist working at the Wisconsin Regional Primate Research Center.
- Ninth grade students from San Angelo, Texas corresponded with an anthropologist from Los Angeles, California about civil rights, both as they could be explored in reference to the first Rodney King trial (that was taking place at the time of the exchange) and historically, by examining the struggle for African American rights during the late 1950's and early 1960's, with particular emphasis upon the contributions of Dr. Martin Luther King, Jr.
- Third grade students from San Antonio, Texas communicated with a naval officer and meteorologist stationed at Fort Biloxi, Mississippi about atmospheric physics and atmospheric dynamics, even though, as the subject matter expert indicated, they probably didn't realize that their questions concerned such complex topics.
- Sixth grade students in Houston, Texas, who were engaged in multi-disciplinary study of the Middle Ages, posed questions to a medieval history professor who worked at the University of Illinois, addressing her as "Learned Sage." She, in turn, answered their questions, calling them "Seekers of Knowledge."
- Twelfth grade students in Atherton, California corresponded with a computer scientist from British Columbia about their individual projects in cosmology that dealt with physics beyond the solar system.
- Fifth grade students in Amarillo, Texas communicated with a researcher from A, T & T Bell Laboratories about sailing and celestial navigation. The subject matter expert in this team both answered questions and suggested simple experiments for the students to try to help them to understand the information that he was communicating.
- Second grade students in Reading, Massachussetts, who were studying about magnetism, posed questions that were answered by a physicist from Arizona State University.
- Ninth grade students in Hart, Texas corresponded with an engineering professor from Boston University about waves and wave phenomena, including radar, sonar, light, sound, radio, seismic waves, ultrasound, and water. The focus of the communication was discussion of applied physics experiments and activities that the students conducted about different types of waves and their interactions.
- Eleventh and twelfth grade students in La Crosse, Wisconsin who were working on labs about the scintillation of light, extinction of light, and variable stars, consulted a nearby university-based physicist, who, we soon learned, knew their teacher before the *Emissary* project "matched" the team.
- 16-to-18-year-old students from Salmon Arm, British Columbia, who were curious about virtual reality technologies, corresponded with a computer scientist working for Boeing and NASA, later commenting upon his skill in using humor and professional anecdotes to help them to understand technical information.
- Fourteen gifted high school students from Nacodoches, Texas interacted online with 14 different subject matter experts on topics of individual and mutual interest and research, including: marine biology, blues music, harmony in music, computer graphics, the Elizabethan era, biotechnics, black holes, documentary direction and production, the physics of fire-fighting, the effect of the media on public opinion, genetic engineering, the New Age movement, reincarnation, and the effect of day care on child development.

Additional topics that were collaboratively explored among students, teachers, and subject matter experts via

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electronic mail during the 1992-93 and 1993-94 academic years included geometry, geology, human genetics, world events, desktop publishing, rainforests, acid rain, marine toxicology, chaos theory, sharks, skates, and rays, subatomic particles, folktales, mathematical models for ecological systems, folktales, AIDS, and more. The number of teams (approximately 30 during the first year of the project, and more than 50 during the second year of the project) was limited only by the available support for the project; more than 300 subject matter volunteers offered their services, and many more teachers requested matches than the project's facilitators could support.

How it Works

Support for the *Electronic Emissary Project* was has been provided primarily by the Texas Center for Educational Technology (TCET), and secondarily by *Project CIRCLE*, a U.S. Department of Education grant that was awarded to researchers at the University of Texas at Austin studying the use of computer-supported collaborative learning tools. At the present time, additional funding from corporate foundations interested in educational technologies is being sought to allow for expansion of the project.

Subject matter expert participants are periodically requested by posting announcements to selected Internet-wide LISTSERV groups (subject-specific electronic mail distribution lists). These postings include directions that the prospective volunteers can follow if they would like to add an information form about themselves to an interactively-accessible online database. These forms are searched by topic, in turn, by classroom teachers wanting to request "matches" with SMEs for their students. A sample information form can be found below.

```
        Application to Serve as a Subject Matter Expert

1. Enter your Full Name (as you like to be called):
   --->

2. Enter your full Internet address:
   --->

3. Enter your Work Address:
   --->

4. Enter your City, State, Zip:      Example: Austin, TX, 78731
   --->

5. Enter your Home Phone Number:      Example: (817) 555-1212
   --->

6. Enter your Work Phone Number:      Example: (817) 555-1212
   --->

7. Enter the institution for which you work:
   --->

8. Enter a brief description (1 line) of your current work:
   --->

9. How many times each week can you send and receive e-mail
   to/from teachers and students during the project:

      1)  Once a week
      2)  2 - 3 times a week
      3)  3 - 4 times a week
      4)  More than 4 times a week
```

Enter item NUMBER and press <return> -->

Please list up to five areas of expertise that you would be willing to share with pre-college students in an inquiry-based exchange via electronic mail below, ** in prioritized order. ** Please use language that is understandable to the layperson. Keep to short statements, and please enter after the -->.

After you list the five areas, take a moment to describe each area in the second section of this document.

Example:
1 --> Criminal Justice focusing on race and gender legal issues

BEGIN BELOW THIS LINE

---

1 -->

2 -->

3 -->

4 -->

5 -->

Please describe each of the listed areas above with a short paragraph. The aim is to be able further explain your above short statements. Use as much space as you need. Keep your text between the beginning and ending lines.

[material deleted]

Please describe any past experience that you have had as an educator of students (formally or informally), ages 5 - 18.

BEGIN BELOW THIS NEXT LINE.

Please supply any other information that we should consider while reading your application.

BEGIN BELOW THIS NEXT LINE.

As each new funding award becomes available to the project, a new set of exchange teams can be created. The funding is used primarily to support doctoral-level students in instructional technology who are paid to act as online facilitators to team members. An announcement is sent to the electronic addresses of a list of precollege teachers who have asked to be notified when new Emissary "matches" are available. The announcement contains directions on how these teachers can connect to the Emissary database, search it, and electronically file a request for communication with a particular subject matter expert. A copy of the request form follows.

Request for a "Match" with a Subject Matter Expert

Please type only one line of text after each arrow that appears below.

If necessary, use <Control-H> to delete typographical errors.

---

1. Enter three areas of subject matter expertise, listed in the order of your preference.
   a. --->
   b. --->
   c. --->

2. Enter your Full Name (as you like to be called):
   --->

3. Enter your full Internet address:
   --->

4. Enter your work (street) address:
   Example: Liberty HS, 123 School St.
   --->

5. Enter your City, State, Zip: Example: Austin, TX, 78731
   --->

6. Enter your Work Phone Number: Example: (817) 555-1212
   --->

7. Enter the school's name and location:
   Example: Day Middle School, Austin, TX
   --->

8. Enter the grade level(s) & number of students to be communicating:
Keep to one line. Example: 5th Grade, 22 students
   --->

9. How many times each week will you and your class send and receive/read electronic mail to the SME during the project?

   1) Once a week
   2) 2 - 3 times a week
   3) 3 - 4 times a week
   4) More than 4 times a week

   Enter item NUMBER here -->

Please describe in full the project you have in mind. Use as much space as you feel necessary to describe the planned project that involves communication by electronic mail with the subject matter expert (SME). This information will be shared with the SMEs before selection.

BEGIN BELOW THIS NEXT LINE.

Please describe any special requests or requirements that should be considered before your "match" is made with the SME. Use as much space as you need.

BEGIN BELOW THIS NEXT LINE.

Please supply any other information that we should consider while reading your application. Use as much space as you need.

BEGIN BELOW THIS NEXT LINE.

These requests, collected electronically on the Texas Center for Educational Technology's Internet server, are then forwarded to online facilitators, who contact the subject matter experts who have been identified by the teachers. (Street addresses, telephone numbers, and electronic mail addresses for the SMEs are not revealed to the teachers searching the database, so that subject matter volunteers are not inundated with unsolicited requests for communication.) If the SME agrees to correspond with the teacher and student(s) at the time and about the topic(s) described by the online facilitator, the teacher is contacted electronically with the good news that a "match" has been made.

At this time, a special account on the TCET server is established for the new team. This account will serve as the address to which all communication will be addressed during the exchange. Each account contains a small computer program that automatically copies each message sent, files it in an ongoing mail log, then forwards the message to the intended recipient. The program also records and summarizes exchange statistics, such as numbers of messages sent in specified time periods and message lengths. The mail logs for each communicating team are retained, with participants' prior permission, for study by Emissary coordinators, who are researching the dynamics of adult-child conversation via electronic mail. These mail logs are also monitored by the online facilitators, helping them to know when it is appropriate to offer assistance.

The online facilitators for the project contact each team at least once per week during each exchange to offer technical, organizational, and interactional assistance. Specifically, facilitators help team members to shape their projects according to areas of interest and expertise, students' instructional needs, extent of Internet access, and scheduling considerations. Team members can contact the online facilitators as often as their needs dictate.

At the mutually agreed-upon ending of each exchange, the participants in each team are asked to prepare a joint summary of the project's goals, procedures, outcomes, and applicable suggestions for other electronic collaborators. All teams' summaries are then made available on the TCET server to the Internet community at large. Team members are also asked to complete electronic evaluation forms that the project coordinators use to help them to improve the Emissary's services in the future.

Want to Participate?

By the time that you read this article, the *Electronic Emissary Project* should be gearing up for another semester of "electronic matchmaking." If you would like your Internet address to be added to the distribution list that is used to announce when a new set of matches becomes available, please send a message stating that wish to me at the address listed below.

If you would like to read some of the project summaries that past *Emissary* participants have written and shared, and/or initial research reports associated with the project, FTP to:

tcet.unt.edu

...and look in the subdirectory path:

pub/telecomputing-info/emissary-reports

(Additional information about Internet-based file transfer procedures using FTP commands can be found in chapter 3 of *Way of the Ferret: Finding Educational Resources on the Internet,* which is published by and is available from ISTE.)

As the director of the *Electronic Emissary Project,* I think that I can speak for the project's programmer, Greg Jones, the current online facilitators, Teresa Acosta, Viki Ash-Geisler, Karen Ferneding Lenert, and Ellen O'Bryan, and the additional online facilitators that we hope to involve in the future. It is our hope that the services and research results that the *Emissary* offers to the Internetworked educational community will help others to explore and understand new forms of teacher-student interaction, and new ways to successfully utilize telecomputing technologies in K-12 instruction.

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Other "Mining the Internet" columns are available on the Learning Resource Server at the College of Education, University of Illinois, Urbana-Champaign.

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Organizing and Facilitating Telecollaborative Projects

by Judi Harris

Are you currently planning an online educational project, or do you hope to do so soon? If so, there is advice from experienced project facilitators that you may want to consider, and Internet-based resources that you may want to access to assist your efforts.

Step One: Choose the Curricular Goal(s)

Access to telecomputing facilities in most schools is limited, at best. Therefore, when designing an online activity, it is very important to be sure that the student learning goals that you specify for the activity are:

- tied directly to the curriculum.
- could not be accomplished at all, or as well, using more traditional teaching/learning tools.

By assuring these two aspects of the goals toward which your students will be working, you will begin to ensure maximal time-efficiency and cost- effectiveness of everyone's online efforts.

When choosing the curricularly-based goals for an online activity, it is advisable to think not only about what students will be learning as they participate (the content goals), but also about what they will be doing online, and whether that activity matches one of the process goals that you have specified. Most electronic-mail-based projects, for example, require participants to write to an audience of their peers. It is advisable to ask yourself whether such authentic writing goals are among those in the curriculum that you would have students address by participating in the online activity that you are planning.

Step Two: Choose the Activity's Structure

There are a number of different ways to organize productive online projects. I have described these as "activity structures," or models for designing educational telecomputing activities, in previous "Mining the Internet" columns (Harris, 1994a; Harris, 1994b; Harris, 1994c) and in Way of the Ferret: Finding Educational Resources on the Internet (Harris, 1994d). These structures can be used at many grade levels and in any curricular area, and were conceptualized by reviewing hundreds of successful online projects that classroom teachers created, tested, and shared via the Internet. Effective models for structuring online projects are often unfamiliar to teachers who are just beginning to use Internet-based tools for instructional purposes, because the asynchronous (not- simultaneous-in-time), widely-distributed, text-only, and quick-turnaround attributes of telecommunications media create a unique context for teaching and learning. This is why it is helpful to review possible activity structures and choose or create the most appropriate one at this point in the planning process.

Sixteen activity structures have been identified to date. They fall, in groups of five or six, into three structure genres.

- Interpersonal Exchanges
    1. keypals

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2. global classrooms
3. electronic appearances
4. electronic mentoring
5. impersonations

- Information Collections
  1. information exchanges
  2. database creation
  3. electronic publishing
  4. tele-fieldtrips
  5. pooled data analysis
- Problem-Solving Projects
  1. information searches
  2. parallel problem-solving
  3. electronic process writing
  4. serial creations
  5. simulations
  6. social action projects

New project structures emerge as more teachers and students learn to use the Internet to assist their teaching and learning. This list of structures will be updated and expanded, with specific new activity examples, in the March, April, and May 1995 "Mining the Internet" columns.

Step Three: Explore Examples of Other Online Projects

A good example is often worth a hundred hours of planning time. Once you have chosen the activity's structure, it may be helpful to you to see how other teachers have organized and described projects that have been completed. There are a number of "treasure troves" of such project descriptions freely accessible on the Internet. Many are easily reviewed online using Gopher tools.

The following Gophers contain some of the best collections of precollege online activity descriptions, through which you can freely browse. If you have Gopher software running on the server that houses your Internet account, all you have to do to access these sites is to go to the system prompt in your account and type:

```
gopher server.domain.edu
```

(where server.domain.edu is one of the Gopher addresses listed below).

If you don't have Gopher software available for you to use in this way, then go to the system prompt in your account and type:

```
telnet server.domain.edu
```

...to establish an interactive connection to the Gopher that you have chosen. When asked for a login and/or password, use gopher. Please note that not all Gophers will be available using this method at all times.

Gophers With Information on Educational Telecomputing Activities

- Armadillo Gopher: chico.rice.edu 1170
- Big Sky Telegraph K-12 Lesson Plans: bvsd.k12.co.us
- Consortium for School Networking Gopher: cosn.org
- FrEdMail Foundation Gopher: gopher.cerf.net
- Intercultural E-Mail Classroom Connections: gopher.stolaf.edu
- K12Net Gopher: woonext.dsrd.ornl.gov
- KIDLINK Gopher: kids.ccit.duq.edu
- Learning Resources Gopher (U. of Illinois): gopher.ed.uiuc.edu

58 BEST COPY AVAILABLE

- NASA's Quest Gopher: quest.arc.nasa.gov
- National School Network Testbed Gopher: copernicus.bbn.com
- NYSERNet's Gopher: nysernet.org
- Princeton Regional School District Gopher: gopher.prs.k12.nj.us
- Ralphe Bunche School's Gopher: ralphbunche.rbs.edu
- SchoolNet's Gopher: ernest.ccs.carleton.ca
- Teacher Education Internet Server: state.virginia.edu
- Technology Infusion Into the Curric. (Nebraska): sjuvm.stjohns.edu
- USCD Internet Lesson Plans: ec.sdcs.k12.ca.us

Step Four: Determine the Details of Your Project

Folks associated with the Global Schoolhouse Project, once called "FrEdMail," have perhaps the most experience helping teachers to design, organize, and carry out collaborative educational telecomputing projects. They shared some of their best advice in a helpful article published in TCT almost five years ago (Rogers, Andres, Jacks, & Clausen, 1990). In this article, they made it very clear that a detailed, specifically-stated project description is essential for success. They suggested that the following elements be included in every telecomputing project description and plan:

- The project's title
- The project's educational purpose(s)
- The organizer/contact person for the project's name and e-mail address
- The precollege curricular areas that the project addresses
- The approximate grade levels for which the project is designed
- The number of collaborators that will be accepted
- A summary of the project's plan
- Directions for registration, or joining the project
- A detailed timeline for the project, including specific tasks to be completed and all interim deadlines
- Detailed, specifically-stated, and numbered procedures for participation in the project
- A sample of student work that the project will generate
- How the project will end, including plans for how project results will be shared with all participants

Waugh, Levin, and Smith (1994) suggest that grade levels or age groups not be specified initially during project planning, since cross-age communication can be very beneficial to students. They also recommend that timelines be kept somewhat flexible, to accommodate the inevitable scheduling conflict or technical failure. Finally, they suggest planning in such a way as to encourage distributed project ownership, focusing upon specific, rather than general, topics for study.

Margaret Riel, facilitator for the many successful A, T & T "Learning Circle" online projects, recommends that teachers plan to network with more than one or two other classrooms; ideally, with five to ten classes on an extended project. In this way, it is easier to take maximal advantage of the cultural or regional diversity of all of the participants, and even if several classes encounter network access difficulties, fruitful communication can continue. She points out that it is important to make sure that the amount and scope of information requested of each participating class be reasonable. Margaret also suggests that network projects be planned so that they fit well into the larger framework of classroom activity, and that the information created as a result of telecollaboration be of interest to a wide local audience of other students, teachers, parents, and other community members. Therefore, when the project is complete, the fruits of the students' and teachers' labors can be proudly shared, and community support for educational networking efforts be garnered or strengthened.

Step Five: Invite Telecollaborators

Once you have written a detailed file of project specifics, and uploaded it to your Internet account's filespace, making it ready to include in an e-mail note to each interested party who will contact you, it is time to write a brief project description to post in public discussion areas that are frequented by other K-12 teachers with Internet access. Waugh, Levin, and Smith (1994) suggest that this brief file be used to

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advertise the availability of the project, and make an offer to send more details to any interested parties who send private e-mail requesting them. My experience organizing online projects has confirmed the effectiveness of this method, especially since the Internet addresses of interested teachers can be retained for use later when organizing other projects.

There are several electronic mail discussion lists, or LISTSERVs, that are particularly good places to both learn about other teachers' new projects and make information about yours available. If you are very new to educational telecomputing, and would prefer to join in on a project that another teacher has organized before attempting to design your own, subscribe to one of the lists below. Please be warned, though, that the e-mail generated by most of these lists is frequent (many messages each day). If you do decide to subscribe, make sure that you log into your account every day to read and delete your messages. If you do not have the time to do this, and computer conferencing/electronic bulletin board/newsgroup facilities are provided in your account, consider contacting the system manager and requesting that the distributions to one or more of these lists be fed into a local newsgroup that anyone with an account on your local system be able to access.

The first address given for each of the lists below is the address to which postings to be distributed are sent. The second address given is the one used only for automatic administrative functions, such as registering to receive the list's messages as they are posted (done using the subscribe or sub command), or ending your registration (done using the signoff command). If you do not have enough time to sift through possibly many messages each day, then you might want to consider posting the brief description of your project to the list without joining it first.

Discussion Lists With Educational Telecomputing Project Information

- Intercultural E-Mail Classroom Connections: iecc@stolaf.edu To subscribe, send a message to: iecc-request@stolaf.edu
  In the text of the message, type: subscribe
- Projects in the Intercultural E-Mail Classroom: iecc-projects@stolaf.edu
  To subscribe, send a message to: iecc-projects-request@stolaf.edu
  In the text of the message, type: subscribe
- KIDLINK Projects: kidproj@vm1.nodak.edu
  To subscribe, send a message to: listserv@vm1.nodak.edu
  In the text of the message, type only: sub kidproj Your Name
- KIDLINK Project Forum: kidforum@vm1.nodak.edu
  To subscribe, send a message to: listserv@vm1.nodak.edu
  In the text of the message, type only: sub kidforum Your Name
- Kidsphere Discussion Group for Adults: kidsphere@vms.cis.pitt.edu
  To join, send a message to: joinkids@vms.cis.pitt.edu
  In the text of the message, type: subscribe kidsphere
- Kidsphere Discussion Group for Kids: kids@vms.cis.pitt.edu
  To join, send a message to: joinkids@vms.cis.pitt.edu
  In the text of the message, type: subscribe kids
- Penpal Requests Discussion Group: penpal-L@unccvm.uncc.edu
  To subscribe, send a message to: listserv@unccvm.uncc.edu
  In the text of the message, type only: sub penpal-L Your Name

Please be sure, whenever posting calls for telecollaborators to discussion lists, that you ask interested teachers to respond to you privately, using the Internet address that you supply, rather than replying to the list itself. This will decrease the number of unwanted messages received by the list's members.

Rogers, Andres, Jacks, and Clausen (1990) suggest that you "try out" a new project idea with a small group of close colleagues first, before opening it up to the larger online community. In this way, the operational fine points of the plan can be uncovered with relatively little embarrassment, and in small scale.

A distribution list of announcements of Global Schoolhouse/FrEdMail projects that is "read only" (a list to which you cannot post information about your project, unless you are working on the FrEdMail system), can be joined by sending personal electronic mail to Al Rogers at: hilites@bonita.cerf.fred.org. If you

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choose to do this, please remember that you will be talking with a person, not a computer program. Al has done much to make educational telecomputing projects accessible to and successful for teachers and students all over the world, so if you message him, this might be a good time to thank him for that labor of love.

Step Six: Form the Telecollaborative Group

As the excited responses from potential telecollaborators come to your e-mailbox, send each, as quickly as possible, the long and detailed file that you prepared in advance that tells all about the project. Be sure that the file specifies procedures for how interested teachers can register to participate in the project, a maximum number of classes that can take part, and the deadline for requesting participation by return e-mail.

Save the information from each teacher's registration message in a file in your Internet account that you will download later. The registration should include the teacher's name, full Internet address, school name, school location, school telephone number (to use only in "emergencies"), and the number and grade level(s)/age group(s) of the student(s) who will be involved in the project. Respond to each teacher's request for registration as quickly as possible, possibly using another prewritten file that has additional information about how to begin the project. Waugh, Levin, and Smith (1994) suggest that this time be used to advocate distributed project ownership by encouraging participating teachers to collaborate to plan the finer details of the project.

If more teachers want to register for the project than you think that you can handle, message each teacher who won't be able to join in with a friendly, polite apology. Also, if you think that you will do the same or a similar project in the future, you might want to tell them that you will retain their Internet address to use as part of a distribution list later when you announce the availability of the project for registration again.

Step Seven: Communicate!

Online communication is different from most other forms of communication in significant ways. It is asynchronous, primarily text-based, widely geographically and temporally (time-zone) distributed, and fast. Therefore, it requires somewhat different communications techniques if it is to be used for maximal educational benefit by students and teachers.

Since each activity structure requires a slightly different type and sequence of online interaction, only general suggestions for facilitating online discussion will be shared here. You will undoubtedly discover and share more as you communicate with the other teachers and students online.

Waugh, Levin, and Smith (1994) suggest that you:

- Form a distribution list of all project participants, so that periodic reports of progress and materials sent to meet interim deadlines are easily shared and filed.
- Sign all of your e-mail with all of the names of the people contributing to the message. I would add that including the school name and location is helpful, too.
- If there is discussion taking place online, before you add your perspective to the conversation, provide a brief synopsis of the discussion to date, so that all readers clearly understand the context in which you are asking your question or making your comment.
- Be willing to share what you know (especially in terms of technical assistance) freely with newcomers, who can often feel intimidated when first online.
- Focus the discussions carefully upon the pre-selected topics for collaborative study.
- Use short private messages to keep communications alive, such as:
    - "return receipt messages," which are sent to team members if you are busy, to tell them that you have received their message, and will answer it soon.
    - "cheerleader messages," which recognize and praise exceptional efforts.
    - "ping messages," which ask participants who have not posted something recently to the group whether they are still participating.
    - "thank-you messages," which help to encourage participation when sent as interim expressions of appreciation.

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An important addition to this list is the use of "reminder messages," which serve to remind participants of approaching interim deadlines. These messages can be very helpful in assuring a project's success within typically constrained school week schedules.

Rogers, et. al (1990) suggest that you involve students, whenever possible, in the ongoing facilitation of the project. I would add that involving parent volunteers, if possible, is a good idea. Keeping administrators, PTA members, and local news media informed of the project's existence and the students' accomplishments is also well worth the time spent doing "public relations," considering the possibility of future project support and additional Internet access points at your school.

Step Eight: Create Closure

All of the authors mentioned in this article suggest that telecomputing projects end with a final, tangible product (such as a report, public presentation, short videotape, display, etc.) that is firmly scheduled, completed, and shared with all participants, then made available to a larger, interested community. The importance of this suggestion cannot be overstated. After all of the planning, coordination, collaboration, and hard work that project participants have expended, and all of the rich learning that took place, opportunities should be available for participants and their associates outside of the project group to marvel at what has been accomplished. Also, if plans for and results of the project can be made anonymously available through a file archive or Gopher online, the project could serve to inform other teachers' design and implementation efforts in the future.

If there is time available for post-project communication, students and teachers often enjoy informally sharing perspectives upon and memories of different stages in the online exchange with each other. It is also important to remember to allow time and opportunity for everyone to say "good-bye," "thank you," and perhaps begin to speak about possibilities of working together in the future.

An Ethiopian proverb metaphorically illustrates the power that can be expressed among telecollaborators who follow these eight steps to organizing and facilitating educational telecomputing activities. The proverb says:

When spider webs unite, they can tie up a lion.

Here's hoping that these suggestions will help you and your students to start spinning.

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Other "Mining the Internet" columns are available on the Learning Resource Server at the College of Education, University of Illinois, Urbana-Champaign.

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Educational Telecomputing Projects: Interpersonal Exchanges

by Judi Harris

Your telecommunications account allows you to access an almost inconceivable amount and variety of online information. In mid-1994, for example, there were more than 2 million hosts (computers with unique addresses that allow users access to online services) on the Internet, and between 20 and 30 million people in 146 countries who could exchange electronic mail with each other (Calcari, 1994; Quarterman, 1994). Within this vast array of possible connections, there are basically two ways that information can be shared online: *among people* and *between people and remotely-located machines.*

Internetworked computers can house publicly-accessible databases, file archives, and virtual environments. I call these *informational resources.* When using an informational resource, you are actually interacting with a computer program, using it to help you to locate and collect information. Computers on the Internet can also house user accounts, with which account-holders can communicate either privately or publicly with other users, sharing information person-to-person. The tools that allow us to make such interpersonal connections can be seen as *interpersonal resources.*

Both informational and interpersonal resources can be used to help students explore curriculum-related topics in precollege classrooms. In this month's column, six different types of *interpersonal exchanges,* or educational telecomputing activities that incorporate use of interpersonal resources, will be presented. For the next three months, "Mining the Internet" will feature examples of three different general classes of educational telecomputing activities: *interpersonal exchanges* (this month), *information collections* (in April), and *problem solving projects* (in May). Each genre of educational telecomputing activities includes five, six, or seven different *activity structures,* and each structure will be presented with at least one example activity that has been classroom-tested and shared by telecomputing teachers.

It is my hope that by providing you with *activity structures,* rather than a potpourri of lesson plans, you will be empowered to design effective educational telecomputing experiences for your students that are curriculum-based and adapted to suit their particular learning needs and preferences. This idea (and earlier versions of these activity classes and structures) was first presented in the May 1993 "Mining the Internet" column, then expanded in the February, March, and April 1994 "Mining" columns. The following structures and examples are intended to serve as an update to that earlier work.

"Keypals"

The most popular types of educational telecomputing activities are ones in which individuals "talk" electronically with other individuals, individuals "talk" to groups, or groups "talk" with other groups. Since all teachers with telecommunications access can use electronic mail, many of these projects employ Email (sometimes via LISTSERV discussion groups) as the common context for exchange. Other teachers and students use newsgroups and Internet-connected bulletin boards for projects such as the ones listed below.

Keypal projects were the first educational telecomputing activities to be tested online. When an online activity is organized according to this structure, individual students in two or more locations are matched with each other so that they can communicate using Email.

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For example, students at Burleson High School in Texas communicated with students from South Africa, Norway, Finland, Denmark, Peru, Russia, Estonia, Chile, Mexico, England, Iceland, Germany and Canada, exchanging information about their experiences living in the 14 different countries as part of a project called "The World at Our Fingertips." Their teacher, Brenda Yowell, arranged for these exchanges by posting a message to the KIDLINK discussion list. Diane Eisner of Lexington, Massachussetts, similarly arranged for her 85 seventh-grade students to discuss the books *I Am Rosemarie* and *The Cay* with electronic "literature partners" via electronic mail and synchronous discussions on IRC (Internet Relay Chat).

"Town Twinning" projects, in which students from towns with the same names in different countries communicate with each other, can also be conducted according to keypal activity structures. For example, students from Mano Talaiver's classes in Richmond, Virgina communicated with Mike Burleigh's students from Richmond-on-Thames in the United Kingdom, first answering the four questions that all participants on the KIDPROJ discussion list must address:

1. Who am I?
2. What do I want to be when I grow up?
3. How do I want the world to be better when I grow up?
4. What can I do now to make this happen?

Melanie Golding, a English teacher from a high school in northern New York, structured a six-week keypal project in which her 14 - 17-year-old students exchanged information about their families, town histories, schools, local geography and history, local and federal governments, and holiday customs. The educational goals for keypal projects in general are well stated in this excerpt from the message that she posted to announce the availability of this "Getting to Know You" project:

> I hope that my students are able to connect with students from France, Germany or Israel because they have studied these countries this year in their history classes. My intention is to foster communication, technology, and cultural awareness. This can happen by merely letting the children talk. We can start this process by having the children write individually to one another.

Unfortunately, student-to-student keypal exchanges often involve more managerial work than many teachers have time to contribute. Group-to- group exchanges (called *global classrooms,* and presented in the next section), especially those with a particular study emphasis, can evolve into fascinating collaborative explorations without overwhelming activity facilitators with the transfer and processing of multiple electronic mail messages sent to and from a single account.

Global Classrooms

Using this activity structure, two or more classrooms (located anywhere in the world, of course) can study a common topic together, sharing what they are learning about that topic during a previously-specified time period. Currently, this appears to be the most popular type of educational telecomputing project.

For example, students from Barrow, Alaska posted the following message in mid-November, 1994, initiating a simple and fascinating global classroom project:

> Date: Thu, 17 Nov 1994 15:45:57 GMT
> From: Maryann Holmquist <mholmquist@arctic.nsbsd.k12.ak.us>
> Subject: sunset
>
> Greetings from Barrow, Alaska, USA. It is pretty cold in the Arctic. We live in a desert but tomorrow (Nov. 18) when the sun dips below the horizon like a seal we will not see it again for 65 days. Sunrise is at 12:37 p.m. and it sets at 1:46 p.m. for a total of 1

hour, 9 minutes of day. The horizon will be a fiery orange. We will continue to ride on snowmobiles and go sliding and when we get cold we'll go inside.

Write to us and tell us something about the sun from where you live on this planet. How much sunlight do you get? Do you have a favorite sunset you remember?

From the Kids at Ipalook School

Students from Caribou, Maine organized a project through which several groups could explore similar cultural roots with this message:

Date - Mon, 12 Sep 1994 15:27:28 -0400 (EDT)
From - Paula Robertson <paularob@saturn.caps.maine.edu>
We are grade 8 students from Caribou, Maine, who have Acadian roots(French) and we want to compare our cultures and lifestyles with the Louisiana Cajuns. Is there anyone out there who may know of schools or individuals in the Lafayette, Breaux Bridge, Broussard and Iberia regions of Louisiana who have electronic mail capabilities with access to Internet? We are excited about this project and want to start as soon as possible. Please spread the word. :-)
Paula Robertson
Ruth Dionne

8-year-old students from New Zealand studied villages (including the Global Village) by asking other students from anywhere in the world to answer the following questions:

1. What do you think a village is?
2. Could your area be called a village? If not, how do you describe your area?
3. List some features of your village. (We're looking for similarities and differences here)
4. Do you know of any other kinds of villages?
5. Do you think our class could be part of The Global Village?

Here's a question in case none of the above questions appeal!

6. What do you think the Global Village means?

These students, with the help of their teacher, Sue Graham, offered their responses to the questions in this way:

We think a village is a place where families live. It is a group of houses and shops close together.

We live in the city of Dunedin, New Zealand, which is halfway between the Equator and the South Pole and we're the first country in the world to see the sunrise each day. Our shopping centre is called the Roslyn Village, which is on the top of the hill surrounded by very busy roads. We have lots of shops very close together. There are a number of old wooden villas, some big brick houses, some narrow steep streets, and not many open spaces.

The Maoris, who lived in NZ before the Europeans arrived,

used to live in a fortified village called a pa. This was usually on the top of hill, with a fence to keep out enemies and a good view to see other tribes coming to attack.

We're not sure what The Global Village is, but we know that it has something to do with people living in our world.

What is your village like? Is your 'village' like ours or is it different?

Please note that global classroom projects are often more topically focussed than keypal projects, and involve groups of students, rather than individual students, communicating with each other. In one project, for example, technology specialist Enola Boyd from Amarillo, Texas, organized a collaborative exploration of local nuclear facilities among a half-dozen upper elementary classes. In Ms. Boyd's words, participating students "studied the functions and impacts of nuclear facilities on their surrounding communities."

While some global classroom projects are structurally simple and short-lived, others are quite complex and can involve students for one or more school semesters. The "Desert and Desertification" project, coordinated by Hannah Sivan, David Lloyd, and Oded Bar from Sde-Boker, Israel, is a year-long, four-stage interdisciplinary project for students from around the world who are interested in studying about deserts in the past, present, and future. It includes a rich array of activities, involving participants in discussion, online and off-line data collection and organization, sound and image collection and transmission, film viewing, subject matter expert interviews, literary analysis, desert field trips, simulations, roleplays, and environmental forecasting.

"The S.S. Central America - A Shipwreck to Remember," a similarly rich and varied four-stage, interdisciplinary, year-long project with historical and meteorological emphases, is being coordinated by Jamie Wilkerson of Rosewood Elementary School in Rock Hill, South Carolina. In this project, students electronically explore the voyage and sinking of a 272-foot wooden steamship, along with the weather conditions that led to its demise, in electronic consultation with members of the Columbus-America Discovery Group, the team of scientists and historians who are currently working to salvage the Central America's history and treasures.

Electronic "Appearances"

Electronic mail, newsgroups and electronic bulletin boards can also "host" special guests, with whom students can correspond. A series of such "electronic events" is held regularly in *Academy One* on the National Public Telecomputing Network's *Cleveland Freenet,* coordinated by Linda Delzeit (xx141@nptn.org). One event connects students with authors of children's books, such as Sheri Cooper Sinykin, who wrote *The Buddy Trap, Slate Blues,* and *Next Thing to Strangers,* and who answered students' previously-submitted questions in a public conferencing area during the month of May, 1994. Authors also share "background information, a little about what they have written, and insights on the writing process" while participating in this "Authors Online" project, according to Ms. Delzeit.

An historically-focussed electronic appearance activity, hosted by Academy One, is currently in progress. The "50th Anniversary of D-Day" project helps students to explore World War II by asking electronically for participants' memories. The project was summarized online as follows:

The Dept. of Defense has a World War II Commemorative Community Program surrounding the 50th anniversary events. Fact Sheets from the DOD are posted on various facets of WW II. A special panel of WW II survivors are available for students to ask questions. Some memories have been posted from these survivors that make interesting reading and research. As part of the

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Commemorative Community Program you can sign up your community, school, and community computer system as Commemorative Communities. Each community that registers will receive a Commemorative Flag authorized to be flown on poles just below the State Flag, and each member of the committee will receive a special lapel pin.

Also, NPTN now hosts a multi-national "Career Panel," which calls upon a large number of adults who work in many different kinds of jobs to share details of their responsibilities, employers, work schedules, tools, and educational/professional preparation with interested students.

Electronic appearance projects usually allow students to communicate with locally, nationally, or internationally-known people for relatively short periods of time. When exchanges with subject matter experts become more extended, and an "electronic apprenticeship" forms, the activity structure can be called *electronic mentoring*.

Electronic Mentoring

Internet-connected subject matter specialists from universities, businesses, government, or other schools can serve as electronic mentors to students wanting to explore specific topics of study in an interactive format on an ongoing basis. For example, a "matching service" called the *Electronic Emissary*, based at the University of Texas at Austin, helps volunteer subject matter experts from all over the world and teachers and their classes find each other, structure a mentoring project, and share what they learn together by communicating with electronic mail.

Students can also serve as mentors to other students. Philip Sandberg's undergraduate geology students at the University of Illinois (Urbana- Champaign) served as mentors to precollege teachers and students as part of their requirements for their "History of Life" course. Professor Sandberg described the intent of the project as follows:

I am looking for classroom teachers (with access to a network connection for their class) who are interested in participating in an electronically mediated science education project with me and my students in Geology 143 (The History of Life) this semester. Interested students in my geology class are receiving training in e-mail, news groups and network (Internet) information search and retrieval. I want them to develop skill in electronic communication by linking electronically with elementary and middle school classroom teachers and students and serving as information brokers in support of instructional modules, in those classrooms, on the history of life (dinosaurs, mammal evolution, extinctions, etc.) and history of the earth (origin of the Appalachians, opening of the Atlantic, etc.), and the functioning of the earth (plate tectonics, etc.).

In order to accomplish this, we need participating classrooms with students and teachers interested in advancing their understanding of the earth by collaborating with me and my students. Because a very large number of my students (over 90) originally indicated their interest in participating, we need quite a few classrooms. I anticipate that teams of 3-5 students will work with each participating classroom, searching out answers to the classroom questions,

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either over the network, or through the library resources here on campus. That information would then be transmitted to the classroom, along with its source, including how to navigate to it, if it came from over the network.

Using another activity structure that has recently emerged, students' contacts with subject matter experts is brief; only as long as is necessary to have their questions answered.

Question-and-Answer Services

In the fall of 1994, the U.S. Geological Survey made an exciting new service available to Internet users. "Ask-A-Geologist," coordinated by Rex Sanders of the USGS Branch of Pacific Marine Geology, allows precollege students to submit questions that are answered by professional geologists. The service was described, in part, like this:

Date: Wed, 26 Oct 1994 23:30:57 GMT

Ask-A-Geologist - US Geological Survey offers new Internet service

Have you ever wondered about why California has so many earthquakes, and New York does not? Why is there so much oil in Texas, but not in Wisconsin? What are the deepest canyons in the United States? (The answer might surprise you!) While the answers to many of these questions might be as close as an encyclopedia, some questions are difficult to answer without checking many sources.

Beginning Monday, October 4, 1994, the USGS will offer a new, experimental Internet service - Ask-A-Geologist. General questions on earth sciences may be sent by electronic mail to the Internet address:

ask-a-geologist@octopus.wr.usgs.gov

All electronic mail to Ask-A-Geologist will be routed to the geologist of the day. The geologist will reply to your question within a day or two, or provide referrals to better sources of information. Please include an Internet-accessible return address in the body of your message.

Kay Corcoran, a middle school teacher in Mendocino, California, helped her students to form questions for historians who participate in a number of scholarly electronic mail discussion lists on ancient history to answer. The basis for this project is rich and educationally sound. As Ms. Corcoran stated in her project summary,

To enliven and engage the middle school learner, project-based units based on guided research are a popular feature in the History/Social Science curriculum. Typical research projects utilize the resources of school and

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community libraries, and students need to learn to read information closely and thoughtfully. With the availability of telecommunication resources for research on chosen topics, they soon discover that historical fact is open to interpretation, contradiction and occasional controversy.

As a culmination activity to their research project presentations, those students who have been critical readers, who have recorded inconsistencies, who have exhausted their resources and have unanswered questions may utilize listservs to provide clarification.

A variety of history listservs abound, and the discussions cover a wide range of topics. Not only will 6th and 7th graders see that ancient history is alive and well, but that historical fact is open to interpretation based on evidence. History listservs provide an excellent opportunity for middle school students to observe the give and take of inquiry and to dialogue with the experts.

Conversations with others online can also take on more fanciful characterizations, as in the case of *impersonation activity structures.*

Impersonations

Impersonation projects are those in which any (or all) of the participants communicate with each other "in character." At the University of Virginia, for example, educational history professor Jennings Waggoner "became" Thomas Jefferson via electronic mail for several local elementary classes studying Virginia history. His work is now carried on for a much larger number of precollege students who use Virginia's PEN (Public Education Network) by a team of docents at Monticello, Mr. Jefferson's home. Students who use the Elementary Book Conference on VaPEN can communicate with characters from children's literature, such as Winnie the Pooh, Willie Wonka, and Ramona Quimby. These exchanges are coordinated and studied by Jeradi Hochella, from James Madison University, and Jan Stuhlmann, from Louisiana State University.

Following the popular example set by Kurt Grosshans' advanced placement chemistry students in Virginia with their "Ask Mr. Science" project, participants in the Geometry Forum at Swarthmore College offer the services of "Ask Dr. Math" in the following way:

```
**************************************************
*                  Ask Dr. Math                  *
*                                                *
*             Have a math question?               *
*       No problem's too big or too small        *
*    Want to talk to someone who loves math?     *
*          Let's do some math together!           *
*                                                *
*                  Write to:                     *
*          dr.math@forum.swarthmore.edu          *
**************************************************
```

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If you are a student in elementary, middle, or high school, write to us! We can't wait to get some really good problems

from you. All of the Ask Dr. Math letters are answered by members of "The Swat Team," math students and professors here at Swarthmore College. Ask Dr. Math is a project of the GEOMETRY FORUM, an NSF-funded program housed at Swarthmore College in Swarthmore, Pennsylvania, USA.

Clearly, this is a rich and motivating way for students to use telecomputing tools to help them to explore many curriculum-related topics in dynamic, interactive contexts.

An Educational Telecomputing Archive

Would you like to learn more about any or all of these innovative educational telecomputing projects? If so, there is an Internet file archive subdirectory made just for you. Use the ftp command from your Internet account, or the ftpmail gateway service via electronic mail (both presented in ISTE's Way of the Ferret: Finding Educational Resources on the Internet) to anonymously access the Texas Center for Educational Technology's server at address **tcet.unt.edu**

Once connected, look in the subdirectories contained inside **pub/telecomputing-info/ed-infusions** to find additional details on the activities mentioned above, plus descriptions of telecomputing projects from these and other "activity genres."

In the next "Mining the Internet" column, I will share examples of educational telecomputing projects that can be classified as five different types of *information collections*. Until then, if you would like to share *your* examples of successful telecomputing activities with visitors to the **tcet.unt.edu** archive, please send your activity descriptions, via electronic mail, to me at the address listed below.

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Other "Mining the Internet" columns are available on the Learning Resource Server at the College of Education, University of Illinois, Urbana-Champaign.

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Educational Telecomputing Projects: Information Collections

by Judi Harris

Can the Internet bring knowledge to the precollege classroom? Interestingly, the answer is probably no. Surprised? Probably not, if you consider the differences between *knowledge* and *information*.

Clearly, there is an enormous amount and variety of information available on the Internet. It comes to account holders in many different forms: as text, pictures, video clips, sound files, and software, and via several different information exchange formats: Gopher, World-Wide Web, electronic mail, conferencing, realtime interaction, and direct file transfer. But is this knowledge? Many, like Taylor & Swartz (1991) would say "no." To these scholars, knowledge is the result of the process of knowing, which can only occur as the learner actively *constructs* what s/he knows, using information in this process. Larsen (cited in Fox, 1991) declares that the confusion between knowledge and information

> is perhaps one of the most serious and widespread mistakes in the current use of information technology, and it leads to the attitude that giving students information is identical to giving them knowledge. (p. 224)

Larsen says that knowledge results when an individual personally transforms information. Knowledge is private, while information is public. Knowledge, therefore, cannot be communicated; only information can be shared. Whenever an attempt to communicate knowledge is made, it is translated into information, which other learners can choose to absorb and transform into knowledge, if they so desire.

This distinction, although it may strike you as purely semantic at first, is important to consider when deciding how to structure curriculum-based educational telecomputing activities. Some of the most motivating and successful activity structures are those that encourage students to collect and share information...*and then use it to actively create higher-order ideas.*

In this month's column, five different types of *information collections,* or educational telecomputing activities that help students to collect, organize, and share intrinsically interesting information, will be presented. This article is the second in a three-part series that features examples of three different general classes of educational telecomputing activities: *interpersonal exchanges* (March 1995 *TCT*), *information collections* (this month), and *problem solving projects* (next month). Each genre of educational telecomputing activities includes five, six or seven different *activity structures,* and each structure is presented with at least one example activity that has been classroom-tested and shared by telecomputing teachers.

It is my hope that by providing you with activity structures, rather than a potpourri of lesson plans, you will be empowered to design effective educational telecomputing experiences for your students that are curricularly-based and adapted to suit their particular learning needs and preferences. This idea (and earlier versions of these activity classes and structures) was first presented in the May 1993 "Mining the Internet" column, then expanded in the February, March, and April 1994 "Mining" columns in *The Computing Teacher.* The following structures and examples are intended to serve as an update to that earlier work.

Information Exchanges

There are many examples of thematically-related information exchange that have been presented as popular telecomputing activities. Students and their teachers from around the globe have collected, shared and discussed, for example:

- student-written book reviews
- summer and winter solstice information
- children's voices (as sound files)
- teenagers' fashion preferences
- favorite quotes
- international eating habits
- local weather conditions around the world
- children's hour-by-hour schedules of activities on a common day
- recipes
- wild bird observations
- family life customs and perspectives
- insect identifications
- immigration/emigration experiences
- international holiday customs
- Internet signature files
- videoletters
- schoolground ecosystems
- school safety rules

This type of activity can involve many classes without becoming an overwhelming management task for teachers, and is a particularly powerful application of telecomputing tools because students become both creators and consumers of the information that they are sharing. Projects like these typically begin with a call for participation that is posted by a classroom teacher, such as this message, offered by "Internet angel" Patti Weeg:

From: "Patricia A. Weeg" <pweeg@source.asset.com>
Subject: *Multi-Cultural Calendar: 'Valentine' names

****
Loving Names
****

The Salisbury KIDCLUB kids searched for names of places that capture the 'Valentine' spirit. Please add any other names of cities, towns, mountains, etc. We know there must be similar names in other countries but we just can't recognize them... You'll translate them for us?

Many thanks!

Here's their list:

Darling Range Mts. Australia
Darlington, England
Darlington, South Carolina
Friend, Nebraska
Friendship, New York
Heart's Content, Newfoundland
Heart's Delight, Newfoundland
Honey Brooke, Pennsylvania
Honeygrove, Texas
Kissimmee, Florida

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Love, Oklahoma
Lovejoy, Illinois
Loveland, Colorado
Loveland, Ohio
Lovelock, Nevada
Lovely, Kentucky
Loving, Texas
Lovington, Illinois
Valentine, Nebraska

Kristi, Kelli, Hickory, Maggie, Mickey, Karen, and Nada

Sometimes students initiate information collection projects, too. These two young men, who are from two different countries, initiated an international project about flags by saying:

|~ -=+ KIDPROJ FLAGS PROJECT '95 +=- |~

Dear Friends,

We (Andraz and I) would like to organize a project. A project about flags.
We are asking 'kids' to send us a 'drawing' of their flag and also
a description... What do the colors mean, and maybe some
history...
Please DRAW your flag, because 'scanned' pictures are very big,
and when we get a lot... then the hard drive will get too full :)
Please sent your drawn flag with a description to:

KIDPROJ@vm1.nodak.edu

[material deleted]

Andraz - pttsc3@public1.noprmd.mail.si
Robbert - parwanto@hacktic.nl

Sharing information that is intrinsically interesting to children on an international scale is an excellent way to engage students in authentic cultural exchange.

Database Creation

Some information exchange projects involve not only collecting, but also organizing information into databases that project participants and other students can use for study. Successful information exchange activities can "grow" into database creation activities.

Students in Julie McMahan's Year 9 Computer Literacy classes, for example, created a database of important world events by compiling and reflecting upon answers to the following survey:

IMPORTANT EVENTS SURVEY

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1) How old are you?
2) Are you a male or a female?
3) Where do you live? (City, State, Country)
4) What is the name of your school?
5) What was the most important event that happened in your school during the past year? (Please explain briefly why you feel this event was so important.)
6) What was the most important event that happened in your city or state during the past year? (Please explain briefly why you feel this event was so important.)
7) What was the most important event that happened in your country during the past year? (Please explain briefly why you feel this event was so important.)

As new information access and organization tools (such as the World-Wide Web browser, *Mosaic*,) become more widely used in precollege classrooms, databases that students create across sites can be freely shared with the rest of the Internet community. Databases can also be created *for* students to access, using information that they supply. Venanzio Jelenic (Venanzio@hookup.net), for example, proposed the "Jaunts" project, in which students from many different countries collect pictures of their hometown signs (i.e., "Welcome to Port Sydney, home to 500 nice people and one old grouch."), and send them, along with text describing the town and themselves, to Venanzio, who adds the information to a growing WWW page.

Electronic Publishing

Another type of information collection and exchange can occur with electronic publishing of a common document, such as a newspaper, literary magazine, or electronic journal. For example, students who worked with Priscilla Franklin, of the Woolslair Elementary Gifted Center in Pittsburgh, Pennsylvania, created an "ethnic cookbook" with recipes supplied from students all over the world. John Swang, director of the National Student Research Center at Mandeville Middle School in Louisiana (nsrcmms@aol.com), helps students to edit and publish both printed and electronic journals that feature the results of exemplary student research. And Gary Ritzenthaler (garyz@elm.circa.ufl.edu) coordinates a "Global Student Newswire," which makes high school student-authored news stories and photographs available, via the Internet, to student journalists all over the world who are publishing news using a variety of media locally at their schools.

Tele-Fieldtrips

Organizers for the Global SchoolNet Foundation encourage Internet-connected teachers and students to share observations and experiences made during local fieldtrips with teachers and students from other cities, states, and countries. Erica Rogers (erogers@bonita.cerf.fred.org) maintains and distributes a monthly schedule of international fieldtrip information posted by participating teachers. In this way, if an upcoming fieldtrip will yield information pertinent to a particular class' curriculum, questions can be sent to the children scheduled to take the trip to answer while on the outing.

One unusual example of such an electronic fieldtrip occurred in August 1994, when Jane Goodall took sixty children to visit the exotic animals on the Michael Jackson Ranch, teaching about their care and feeding, and sharing information about the issues associated with animal welfare. The students who visited the California ranch took other children's questions along with them, so that they could find answers and report them back to the remotely-located questioners. After the trip, the student visitors wrote and shared both the answers that they discovered and their general observations and impressions of the experience.

"Fieldtrips" (often *expeditions*) taken by adult or child subject matter specialists are also shared on the Internet. In the month that this article appears, a team of archeologists and bicyclists will be engaged in an expedition to Central America, studying the ancient Mayan civilization as part of "MayaQuest." This rich interdisciplinary project was described, in part, as follows:

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During this school year, a kid-directed team of archeologists and bicyclists will be using the latest technology to help illuminate one of the greatest mysteries of all time: the collapse of the Ancient Maya Civilization.

Between February and May, 1995, the team will travel through Guatemala, Belize, Honduras and southern Mexico. On mountain bikes they'll carry Hi-8 cameras, laptop computers and EXEC*SAT satellite transponders which will connect the team to an on-line audience featured on Prodigy and the Internet.

Students will be able to help direct the expedition and help answer questions by archeologists in the field. CNN Newsroom will air weekly reports on the expedition's progress and students in Minnesota will produce live satellite programs with accompanying support curriculum available via the Internet. All Internet materials are available via Gopher, World-Wide Web, or e-mail.

```
**************************************
*            MAYAQUEST               *
**************************************
*   Gopher: InforMNs.k12.mn.us/mn-k12  *
* WWW: http://InforMNs.k12.mn.us/mayaquest *
*   E-mail: Mayaquest@InforMNs.k12.mn.us  *
**************************************************
```

An equally exciting and sophisticated "vicarious expedition" focussed upon astronomical research was sponsored by NASA in mid-1994 and was dubbed "FOSTER On-Line."

FOSTER On-line will plug an airborne astronomy missions group into cyberspace. These researchers fly on NASA's Kuiper Airborne Observatory with an infrared telescope at 41,000 feet; the altitude diminishes problems with atmospheric absorption. The women and men involved in this research will be based in both Hawaii and California in May and early June. During this time they hope to share the excitement of a NASA research project with K-12 classrooms via the Internet.

Frequent project updates will be sent almost every day. Students and teachers will be encouraged to send question to the team via Email. Various background materials including articles, lesson plans and images will be made available via gopher and FTP. A video documentary about the research team will be aired via satellite once per week. The remainder of this message will provide details on the various components.

Information about the project is archived on NASA's Gopher at: **quest.arc.nasa.gov**.

Online expeditions can even help us to track animals' movements. The "Wolf Studies Project," organized by members of *InforMNs,* a commercial Internet provider in Minnesota, "allowed students and teachers around the world to hear, see, and track radio-collared wolves in the Superior National Forest via the Internet."

As you can see, the possibilities for this kind of rich, multidisciplinary, multimedia virtual experience are quite powerful.

Pooled Data Analysis

Information exchanges are particularly effective when data are collected at multiple sites, then combined for numeric and/or pattern analysis. The simplest of these types of activities involve students electronically issuing a survey, collecting the responses, pooling and analyzing the results, and reporting their findings to

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all participants. One such project involved a group of students in St. Claire Shores, Michigan, who polled other students about the time that they spend watching television. A group of students working through the National Student Research Center (mentioned earlier) distributed a "quiz" to test respondents' knowledge about breast cancer. 10th-year students studying civil justice in Monroe, Michigan collected and analyzed responses to a survey of opinions on physician-assisted suicide.

Pooled data activities have also included projects in which students collect environmental data at numerous and varied sites, then pool and analyze it to reveal patterns that help to address current scientific challenges. For example, Marita Moll's Year 6 students in Ottawa, Ontario coordinated an international study of ultraviolet radiation levels, and Michele Wendel's students in Concord, New Hampshire led an international monitoring project of low-level ozone readings. Jim Meinke's students in Lakewood, California proposed helping students at other locations create isogonic maps (of the Earth's magnetic fields) with this simple call for participation on the Cleveland Freenet:

INTERESTED IN A NEW WORLDWIDE EXPERIMENT?

MAPPING THE EARTH'S MAGNETIC FIELD (ISOGONIC)

This experiment can involve many classrooms around the globe in:
- communications
- measurement
- mapping skills
- calculations

It would involve a minimum of equipment at each school (or home) to conduct the experiment.
- world map
- compass(es)
- night observation of Polaris (North Star), Southern Cross for our southern neighbors

The experiment would involve many schools or homes involved in gathering the data from their latitude and longitude. How far off is your magnetic data from true north or south in your location? This data would be transmitted to us here at Lakewood High School and we would send out a summary so that you could construct a worldwide magnetic map in your classroom. This would also lead to discussions on the locations of the magnetic poles as well as how to draw iso or (equal) lines. It might also lead to discussions of night sky movements around the constellations or how the magnetic field is thought to be created.

ARE YOU INTERESTED?

If you are interested in trying such an experiment, drop me a quick note at the address below.

Jim Meinke - Lakewood High School
bd765@cleveland.freenet.edu

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Clearly, this type of project holds much promise for involving students in large-scale research efforts that use mathematics and scientific methods to answer complex and interesting questions.

An Educational Telecomputing Archive

Would you like to learn more about any or all of these innovative educational telecomputing projects? If so, there is an Internet file archive subdirectory made just for you. Use the **ftp** command from your Internet account, or the **ftpmail** gateway service via electronic mail (both presented in ISTE's *Way of the Ferret: Finding Educational Resources on the Internet)* [Harris, 1994] to anonymously access the Texas Center for Educational Technology's server at **tcet.unt.edu**. Once connected, look in the subdirectories contained inside **pub/telecomputing-info/ed-infusions** to find additional details on the activities mentioned above, plus descriptions of telecomputing projects from these and other "activity genres."

In the next "Mining the Internet" column, I will share examples of educational telecomputing projects that can be classified as seven different types of *problem-solving projects*. Until then, if you would like to share *your* examples of successful telecomputing activities with visitors to the **tcet.unt.edu** archive, please send your activity descriptions, via electronic mail, to me at the address listed at the end of this column.

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Other "Mining the Internet" columns are available on the Learning Resource Server at the College of Education, University of Illinois, Urbana-Champaign.

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Educational Telecomputing Activities: Problem-Solving Projects

by Judi Harris

Roger Lewin once said:

Too often we give children answers to remember rather than problems to solve.

Problem solving is one of the most beneficial educational opportunities that we can offer students of any age. The Internet can be used to extend cooperative problem solving activity around the world. Educational problem solving projects are, as yet, the least common kind of Internet- based activity that involves precollege students, but they are among the best examples of how asynchronous connectivity can be used to support and enrich precollege curricula.

Problem solving projects are one of three general types of educational telecomputing activities that have been presented in this "Mining the Internet" series: *interpersonal exchanges* (February 1994 and March 1995), *information collections* (March 1994 and April 1995), and *problem solving* (April 1994 and May 1995). Each general class of educational telecomputing activities includes 5, 6 or 7 different *activity structures,* and each structure is presented with at least one example activity that has been classroom-tested and shared by teachers on the Internet.

It is my hope that by providing you with activity structures, rather than a potpourri of lesson plans, you will be empowered to design effective educational telecomputing experiences for your students that are curricularly-based and adapted to suit their particular learning needs and preferences. This idea (and earlier versions of these activity classes and structures) was first presented in the May 1993 "Mining the Internet" column, then expanded in the February, March, and April 1994 "Mining" columns. The following structures and examples are intended to serve as an update to that earlier work.

There are seven different educational telecomputing activity structures that can be considered to be within the problem solving genre. They are *information searches, electronic process writing, sequential creations, parallel problem solving, virtual gatherings, simulations, and social action projects.*

Information Searches

In this type of online activity, students are provided with clues, and must use reference sources (either electronic or paper-based) to solve problems. For example, learning disabled students at Desert View High School created the following activity with the assistance of their teacher, Michael McVey:

```
Date: Sun, 20 Nov 1994 20:06:31 -0700 (MST)
From: an308@freenet.carleton.ca
Subject: A Challenge to All Students: Where Are We?

Dear Students,
```

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My students are ready to challenge you. We have forty postcards to give away (that's all we can afford right now) to students who are up to our challenge. We will send you a postcard from our city if you can guess where we are _AND_ send us a set of clues about your own home. We want you to challenge us too.

Here are the clues. You can try to figure out the answers in teams and make a game of it or work as a group. Good Luck. ;-)

1. We can see Mexico on a clear day.
2. We rarely get snow.
3. Our city nickname is The Old Pueblo.
4. United States Supreme Court Justice O'Connor comes from our state.
5. Our state's birthday is on Valentine's Day.
6. We live south of the bird that rose from the ashes.
7. Mount Lemmon is in our backyard.
8. Our area code is (200 * 3) + 2.
9. We have 300 days of sunshine a year.
10. We are the southernmost ski area in the United States.

Good luck. We have 40 postcards to give away. Remember though, you must send in a list of questions for your own home to challenge us.

Mr. McVey added a note to potentially participating teachers, suggesting that their students use encyclopediae, atlases, and "the full resources of the Library to answer these questions."

Information search activities can also be of longer duration, and embody rather extensive and sophisticated research, analysis, and communication activities for participating students. A good example is the "What's in a Name?" project that is taking place during the 1994 - 95 academic year via KIDLINK interpersonal and informational communications facilities (i.e., the KIDLINK and KIDPROJ discussion lists, the KIDLINK Internet Relay Chat, and the KIDLINK Gopher). The challenge to different groups of participating students in this project is to research particular sets of related names (of people), examine name collections according to particular aspects (such as mythological connections, cultural differences in naming practices, etc.), and then take the results of this collaborative research and analysis and share it electronically through written reports of findings. Din Ghani (din@ghani.demon.co.uk), the organizer of this project from Newcastle upon Tyne, England, has provided a detailed and richly- conceived structure for the year-long project, which organizes students' work into multiple and multi-site "research," "analysis," and "management" "work packages."

Electronic Process Writing

Students in Trevor Owen's (towen@yorku.ca) English classes in Toronto regularly posted the poems that they wrote to newsgroups sponsored by Simon Fraser University, so that other students in Canada could offer feedback in an electronic version of process writing sessions. Mr. Owen has also been able to enlist the assistance of professional writers, such as the poet Lionel Kearns, to offer constructive criticism...and to sometimes receive some of the same (from the students), in response to pieces in progress. This "Writers in Electronic Residence" project is now supported by York University, and helps students to explore many

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different types of writing.

Electronically-assisted process writing can also take on other forms. For example, 14- and 15-year-olds from a number of different school sites are now participating in the "Doomed Train" project, organized and facilitated by Francis Achiu (francisa@kalama.doe.hawaii.edu) of Moanalua High School in Honolulu, Hawaii. This project concentrates upon the situation in Bosnia-Hersegovina by asking students to complete the following activities:

We plan to ask our students to write a persuasive essay that addresses the question "Should Bosnia-Hersegovina remain a confederation or be divided into Croat, Muslim and Serb sections?" The English classes will be divided up into six or seven teams consisting of four heterogenously grouped students. Each team will be asked to select an ethnic group and take a side on this question and present their arguments. Thus, we will have one Croat group arguing for a confederation and another Croat group arguing for separation. The same will go for the other two ethnic groups so that each team will be different. We plan to put this lesson and question on the Internet and call for participation. The classes from around the world can select any of our teams to challenge. Through E-mail the students can exchange papers and offer rebuttals.

Note that this electronic process writing project asks students to concentrate their feedback primarily upon the *content* of each other's writing, while projects such as the "Writer in Electronic Residence" asks writers to concentrate primarily upon the *forms* through which content is communicated. In both cases, rich, geographically unbound, constructively critical exchanges occur.

Sequential Creations

An intriguing kind of artistic problem-solving has emerged on the Internet, in which participants progressively create a common written text, a shared visual image, or a collaboratively-constructed computer program. Yvonne Andres (andresyv@cerf.net) and Mary Jacks, from Oceanside High School in California, for example, helped their students to start a sequential text by encouraging them to write the first few stanzas of a poem about world peace. They then sent their work on to students in a different school, who read the stanzas already written and added their own. This process continued until the poem had circled the world several times, and had grown (understandably) to epic length.

Paul Fretheim (fretheim@guest.nwnet.net) organized students from all over North America in the spring of 1994 to create a "Native American ChainStack." Students at participating sites created *HyperStudio* stacks on the Native American tribes found in their geographic locations, and then combined these stacks into a common interactive resource. John Ost (jost@mv.mv.com) organized students who were participating in a monthly real-time "Writers' Corner" via the *KIDLINK* Internet Relay Chat to create a short story online, following this plan:

(1) Let's build a short story as a group online. Don't worry about punctuation or anything other than building a story. So come to the meeting with three nouns, verbs and adjectives that you'd like to see as part of the story.

For example: nouns -->cat, ball, string;
verbs ---> hit, swat, swallow;
adjectives---> big, hard, green.

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If I told the story myself, I might write the following:

"I have a big cat named Maryann. Actually, Maryann was a boy cat but I didn't know it so I named him Maryann. One day he saw a green, hard ball lying in corner. He dashed over to the ball and swatted it with his paw. The ball shot across the room and suddenly flew back and hit Maryann right in the nose. "What happened?" He purred to himself. Maryann carefully nuzzled the ball forward with his nose. To his surprise he saw a long gray piece of string attached to the ball. ... "

Well, you get the idea. Now when everyone else comes prepared with words, that story won't just have my nouns and verbs *or my original story idea.* Instead it will be a composite story that grows as each of us adds our choice of words and ideas to each sentence.

Each one of us will take turns being the narrator and building the sentence from the words made available by the group.

(Lord knows how this will work if lots of people come to the meeting. But we'll make it work.)

We can put whatever rules we want on the story telling. But we'll have to decide those rules when we meet. And those rules can always change -- just like they will as you learn to write your own stories and develop your own style of writing.

This activity structure seems to be applied both synchronously and asynchronously, using both text and images, to support intriguing collaborative creative efforts.

Parallel Problem Solving

Using this activity structure, a similar problem is presented to students in several locations, which they solve separately at each site, then share their problem-solving methods electronically. For example, middle school students on the statewide educational telecommunications network in Virginia (VaPEN) participated in an interdisciplinary project called "Puzzle Now!," organized by Heidi Bernard (hbernard@radford.vak12ed.edu). In this project, students from 25 sites within the state solved a common puzzle each week for 8 weeks, comparing not only solutions, but, more importantly, multiple methods for working the problem.

In another parallel problem solving activity, elementary-level students in different classrooms designed floating boats made out of a 15 cm. square of aluminum foil to hold as many pennies as possible, then shared designs, problem-solving procedures, and experiences via electronic mail. This simple, but powerful activity was coordinated by Barbara Leonard (bleonard@chpchat.mich.fred.org), a substitute teacher in central Michigan.

Also, in conjunction with Earth Day observance in the spring of 1994, students in many different grades and

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schools were challenged by David Warlick (dwarlick@dpi1.dpi.nc.gov) of Raleigh, North Carolina, to become "Eco-Entrepreneurs" by developing "an imaginative new product that could make a profit, but not impact on the environment." The product designs had to include use of at least 50% recycled materials. Participating students wrote and submitted "sales pitches" for their products on Earth Day, which David complied into an all-sites catalog. Participating student groups then used the electronic catalog to select and place fictitious orders for the products that they chose. The "sales statistics" were then sent to all groups for review and discussion.

Virtual Gatherings

Virtual gathering activities bring together participants from different geographic locations and time zones in real-time to either participate, virtually "in person," in a computer-mediated meeting, or simultaneously participate, "in spirit," without direct electronic contact, in similar activities at different project sites. Students using the *KIDCLUB* Internet Relay Chat can participate on most Saturdays, for example, in discussions organized by Patti Weeg (pweeg@source.asset.com). On one Saturday in March of 1994, students chatted about what they would do "if they were in charge of the school." Patti suggested that they think about the answers to questions such as these to help them prepare for the virtual gathering:

1. If I were principal what would I change about our school? Why?
2. What would I keep the same? Why?
3. As a student do you feel that your views are respected?
4. Do you have any part in decision making in any of your classes?

In a poignant virtual gathering involving all 67 school districts in Florida, students and teachers observed "A Day Without Art" on the 8th annual World AIDS Day. Sandy McCourtney (mccours@firnvx.firn.edu) and Sally Lucke, coordinators for the activities, described the "in spirit" aspect of this virtual gathering as follows:

THE ACTIVITIES: Schools representing all 67 Florida districts will submit visual and discourse statements in the form of a blindfold and an awareness statement. These blindfolds will be draped on the statuary located in the Ringling Museum Courtyard, signifying the message that at times, regarding AIDS, "we are unaware and cannot see." In a symbolic gesture, the blindfolds on the museum statuary will be removed, once the on-site and electronic dialogs have commenced.

THE INVITATION is this:
1. Send an electronic awareness message, a message of support, or, a 'factoid' (facts) related to AIDS and/or,
2. Design a piece of cyberspace-cloth to blindfold one of the statues!
Please limit messages to no more than one screen; if you intend to send a graphic file, please send an email (text) message to the address below to specify the paint and compression program you will be using.

Virtual gathering activities can incorporate use of multimedia. During the weeks of March 7 - 13, 1994, for example, students from many different Internet sites helped to build "CitySpace" (http://www.exploratorium.edu), a model of a virtual city hosted by the San Francisco Exploratorium. Students had previously sent in stories, scanned photographs, hand- drawn pictures, audio samples, 3D models, etc. about the neighborhoods and "imaginary spaces" in which they live. These were then used by teams of students, artists, and developers to create CitySpace, which is continually evolving, and can be

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explored via online multimedia tools, such as Cornell University's "CU-SeeMe" freeware.

Simulations

Online simulations require the most coordination and maintenance of all activity structures, but the depth of learning possible and task engagement displayed by participants can convince project organizers to spend the additional time and effort necessary to make them work. Notable examples of successful online simulations include Academy One's *NESPUT* ("National Educational Simulations Project Using Telecommunications) activities, coordinated in 1994 by Bob Morgan (xx118@nptn.org). These collaborative projects simulate space shuttle launches, historical space missions, space colony design, ozone layer repair, and stock market investments, to name just a few. These activities depend upon person-to-person communication to create the simulated situation.

Simulations can also be organized around the use of software that creates the virtual worlds that students explore. The National Educational Supercomputing Program (NESP), for example, permits classes of students to use supercomputing facilities at the Lawrence Livermore Laboratory remotely to help them to solve proposed projects in science and mathematics. Sophisticated simulation software, which allows students to explore, for example, climate modeling, ray tracing, molecular configuration, or plant growth modeling is made available to students and teachers at their school sites, along with teacher education materials and curricular integration models. Linda Delzeit (linda@nptn.org) coordinates the National Public Telecomputing Network participation in this project.

Social Action Projects

It should be no surprise to global citizens living at the end of the 20th century that the Internet can serve as a context for "humanitarian, multicultural, action-oriented telecommunications projects" (Ed Gragert, I*EARN) which involve the future leaders of our planet: our children.

Mike Burleigh (ubjvm6q@ccs.bbk.ac.uk), for example, organized students via the KIDLINK Internet Relay Chats to participate with his students at the Cedars School in London on a 24-hour telecommunications vigil that helped to raise money for children in Lebanon. He described the activity to potential participants, in part, as follows:

```
Dear KIDLINK friends,


We are one of the KIDCLUBs on KIDPROJ trying to find
things which we can do to prove the KIDLINK fourth
question that we are.............
             'thinking globally and acting locally'
.............to make the world a better place.


We have decided to have a sponsored IRC link to raise
money which we will send to the support UNICEF projects
in the Lebanon.


There are will be six of us and we will be staging a 24
hour telecommunications vigil at the Cedars School
London UK.


We will be meeting after school on Friday 11th February
and will hope to receive messages of support from
KIDLINK people around the world.
```


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This will be reported in the local press. Some of us will be sleeping (the tough ones will stay awake).

Nina Hansen, from the Timothy Edwards Middle School in South Windsor, Connecticut (ahansen@uhavax.hartford.edu), organized students from all over the world to "Save the Beaches" by planning and participating in "beach sweeps." She described the organization of the project, in part, as follows:

> The Save the Beaches project is getting underway full force. In order to meet the May 30th deadline, schools are in the process of putting together a schedule and planning their beach sweeps. Each school is coordinating the project according to what works best for them. On Lake Erie, teachers were concerned over what types of litter students might encounter. To help alleviate any health hazards, experts from the State Health Department were called in to give students tips on what to do should they encounter any potentially dangerous litter. Here in Connecticut all students will be supplied with rubber gloves and will be required to wear them during the clean-up. Precautions such as these will ensure both an educational and safe experience.
>
> The most exciting aspect of the project is the wide range of locations that will be participating. At this writing there at least 12 of the United States represented, two provinces in Canada, and the countries of Brazil, Costa Rica, Denmark, Portugal, Australia, and Japan have assured us they will be sending data.

Finally, students from classrooms in California, Tennessee, Virginia, and London, after reading Vice President Gore's *Earth in the Balance: Ecology and the Human Spirit,* cooperated to "investigate the problems created by water run-off and to design a public awareness program that [could] be implemented in their own communities, and then shared and replicated globally" as part of the SAFER (Student Ambassadors for Environmental Reform) Water Project. This work incorporated several Internet-based video teleconference meetings of the four research teams and their invited subject matter expert guests, then televised project results nationally during National Science and Technology week in 1994. The project was coordinated by Yvonne Andres (andresyv@cerf.net) and Al Rogers of the Global SchoolNet, with support from the National Science Foundation and many commercial networks and corporations.

The potential for multi-disciplinary, forward-thinking, truly collaborative learning via projects such as these is awesome. It is also interesting to note that many of the more sophisticated, interdisciplinary, authentic online problem-solving projects focus their participants' attention upon the problem to solve, rather than upon the "answers to remember" or the telecommunications technologies used to share information among coworkers. This clear emphasis upon the *process* of curricularly-integrated learning, rather than the *technologies* that can facilitate that learning or the answers to which that process leads, is perhaps one of the characteristics that makes Internet-based problem-solving projects so potentially powerful.

An Educational Telecomputing Archive

Would you like to learn more about any or all of these innovative educational telecomputing projects? If so, there is an Internet file archive subdirectory made just for you. Use the **ftp** command from your Internet account, or the **ftpmail** gateway service via electronic mail (both presented in ISTE's Way of the Ferret: Finding Educational Resources on the Internet [Harris, 1994]) to anonymously access the Texas Center for Educational Technology's server at this address: **tcet.unt.edu**

Once connected, look in the subdirectories contained inside: **pub/telecomputing-info/ed-infusions**

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...to find additional details on the activities mentioned above, plus descriptions of telecomputing projects from these and other "activity genres."

If you would like to share your examples of successful telecomputing activities with visitors to the **tcet.unt.edu** archive, e-mail your activity descriptions to me at jbharris@tenet.edu.

Reference

Harris, J. (1994). *Way of the ferret: Finding educational resources on the Internet.* Eugene, OR: International Society for Technology in Education.

[Judi Harris, jbharris@tenet.edu; Department of Curriculum and Instruction; 406 Education Building; University of Texas at Austin; Austin, TX 78712-1294.]

Other "Mining the Internet" columns are available on the Learning Resource Server at the College of Education, University of Illinois, Urbana-Champaign.

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April 1994 "Mining the Internet" column, The Computing Teacher

[Electronically reprinted with permission from *The Computing Teacher* journal, published by the International Society for Technology in Education.]

"Opportunities in Work Clothes:" Online Problem Solving Project Structures

by Judi Harris

Henry Kaiser (1882 - 1967) once said that
Problems are only opportunities in work clothes.

Problem solving is one of the most beneficial educational opportunities that we can offer students of any age. The Internet can be used to extend cooperative problem solving activity around the world. Educational problem solving projects are, as yet, the least common kind of Internet-based activity that involves precollege students, but they are among the best examples of how asynchronous connectivity can be used to support and enrich precollege curricula. Online problem-solving activities can be either competitive or collaborative.

Problem solving projects are one of three general types of educational telecomputing activities that have been presented in this "Mining the Internet" series: *interpersonal exchanges* (February 1994), *information collections* (March 1994), and *problem solving* (April 1994). Each general class of educational telecomputing activities includes 5 or 6 different *activity structures,* and each structure is presented with at least one example activity that has been classroom-tested and shared by teachers on the Internet.

It is my hope that by providing you with *activity structures,* rather than a potpourri of lesson plans, you will be empowered to design effective educational telecomputing experiences for your students that are curricularly-based and adapted to suit their particular learning needs. This idea (and an earlier version of these activity classes and structures) was first presented in the May 1993 "Mining the Internet" column. The sample activities that follow are expansions upon the content of that article.

There are six different educational telecomputing activity structures that can be considered to be within the *problem solving* genre. They are *information searches, electronic process writing, sequential creations, parallel problem solving, simulations,* and *social action projects.*

Information Searches

In this type of online activity, students are provided with clues, and must use reference sources (either electronic or paper-based) to solve problems. For example, Tom Clauset of Winston-Salem, North Carolina, developed the *GeoGame,* in which each of 20 participating groups of students provides the same eight pieces of information about their school's location (i.e., latitude, time zone, population, direction from capital city, etc.). The coordinators of the game then scramble the city names, and all groups use reference materials such as maps, atlases, and books to match the cities with the information sets. The winning class is the class with the most correct matches.

A similar project for children in upper elementary grades was coordinated by Dorothy Whitney and the technology committee at Elsmere Elementary School in Delmar, New York. Called *Where in the World is the Mystery Elementary School?*, the project provided sets of clues about fictitious elementary schools in real places in the world, then asked participants to use whatever research tools they had available to deduce the "mystery city." Each set of clues contained six types of information. For example,

School #1 Clues: Find the location of the mystery school located in this city, country:

Artistic: One of my museums houses one of the world's finest archaeological collections - dig that!

Mathematical: Some of my monuments are named for the name of the geometric SHAPE they are!

Scientific: I have a very hot, arid climate, with an average annual temperature of 21 deg C (70 deg F) and average rainfall of 25 mm (1 Inch) - dry and hot, that's all I've got!

Geographic: I am the largest city on my entire continent!

Cultural: Many of my very unique and special historic landmarks, including many mosques, 'cause tourism to be a very important part of my economy - Come one, come all !!

Historical: "Friends, Romans, Countrymen ..." - about 2000 years ago, the Romans built a fortress called Babylon on my current site.

WHERE AM I??????????????????

Electronic Process Writing

Students in Trevor Owen's English classes in Montreal, Quebec (Canada) regularly posted the poems that they wrote to newsgroups sponsored by Simon Fraser University, so that other students in Canada could offer feedback in an electronic version of *process writing* sessions. Mr. Owen has also been able to enlist the assistance of professional writers, such as the poet Lionel Kearns, to offer constructive criticism...and to receive some of the same (from the students), in response to pieces in progress.

Sequential Creations

An intriguing kind of artistic problem-solving has emerged on the Internet, in which participants progressively create either a common written text or a shared visual image. Yvonne Andres and Mary Jacks, from Oceanside High School in California, for example, helped their students to start a sequential text by writing the first few stanzas of a poem about world peace. They then sent their work on to students in a different school, who read the stanzas already written and added their own. This process continued until the poem had circled the world several times, and had grown to nearly epic length.

Another type of sequential creation involves progressive construction of visual images. Ed Stastny (ed@cwis.unomaha.edu), from the University of Nebraska at Omaha, organizes such "visual art collaboration exercises" as a series called *Synergy*. The following online announcement describes how one of these projects was conducted:

SYNERGY is the name for a continuing series of visual art collaboration exercises designed to weave the net even more strongly and instigate communication on all levels between participants.

CROSSWIRE is the second in the series (the first was REVOLT) and will work like this:

- you send in an original, but unfinished image. This can be done via uuencoded email, FTP upload, or by sending in a copy via normal surface post. All images will end up in GIF or JPG digital format.

- accompanying your original image, you will send a one or two line text description of your image. If you do not provide one, we will write it. The text description is to be integrated into a large text file that other participants can browse...deciding which image they wish to manipulate.

- there are three stages...
STARTER, MANIPULATION and FINISHED. The initial image you send in is your "starter" image. Any "starter" manipulated by another participant is then a "manipulated" image. Any "manipulated" image that is manipulated to completion is called a "finished" image.

- a sub-directory called CROSSWIRE will be opened up in the OTIS directory at the FTP site SunSite.UNC.EDU. On July 12th, this directory will be filled with "starter" images from other CROSSWIRE participants. You will then choose as many images as you like to manipulate, get them from the FTP site and go wild and synergetic. - when you finish manipulating an image, you will return it to us via email, FTP or snail-mail, as described above.

If you would like to see some of the results of Synergy's first image creation collaboration, they are posted for anonymous FTP retrieval at: **sunsite.unc.edu** in the subdirectory path:
/pub/multimedia/pictures/OTIS/collabs/REVOLT
More information about how to FTP files on the Internet can be found in the December/January and February 1993 "Mining the Internet" columns.

Parallel Problem Solving

With this kind of activity, a similar problem is presented to students in several locations, which they solve separately at each site, then share their successful problem-solving methods electronically. Jim Kuhl, from Central Square Middle School in New York, for example, invited teachers and their students to replicate an environmental science experiment that he calls *Fishy Habits*:

DO CHANGES IN ENVIRONMENTAL CONDITIONS AFFECT THE BEHAVIOR OF ANIMALS?

Surprisingly, when students are asked this question many say no. Once the FISHY HABITS experimental procedure has been explained to students they still believe that no changes will occur in the fish's behavior. Students predict no real change in the behavior of the fish.

PROCEDURE - After setting up an aquarium containing no more than 5 fish students observe and tabulate the number of times the fish swim to the top of the tank during three distinct experimental phases. During the first phase students tally the number of random trips made to the top of the tank by the fish. During the second phase students count trips made to the top when the fish are fed. When feeding the fish during phase 2 the filter/aerator in the fish tank is unplugged (a strong environmental change). During the final phase of the experiment students once again tally trips to the top, however, the filter/aerator is once again turned off without the addition of food. Will the fish visit the top of the tank thinking that turning off the filter/aerator means t hat food has been added? Join us in a replication of the experiment and find out.

Over the past three years we have "perfected" this experiment during our unit on animals and have developed many ways of standardizing our procedures. We wonder if others would achieve the same results that we have seen.

Alan Hodson and Carol Hooper, who coordinate the *MathMagic* project from two middle schools in El

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Paso, Texas, provide mathematical word problems every two weeks to teams of students to solve, but the teams contain groups of students from different schools in different geographic locations. Therefore, participants must use telecommunications tools to coordinate problem solving efforts, the selection of solutions to submit for evaluation, and the writing and presentation of these solutions according to a standard format.

Finally, Linda Delzeit (aa002@nptn.org), from *Academy One* on the Cleveland Freenet, has coordinated what she calls the *TeleOlympics* each spring for several years. On a preset day in May, participating students all over the world compete against others from their own schools in events that involve running, jumping, and throwing (see below). Their teachers then send the results of these events to Academy One so that a "virtual Olympics" can occur, with international winners in each event declared. There are four age/grade group classifications, and special rules have been established for students who use wheelchairs. The activity is organized as follows.

Group Classifications:

- Class A = grades 10-12, ages 15-18
- Class B = grades 7-9, ages 12-14
- Class C = grades 4-6, ages 9-11
- Class D = grades 1-3, ages 6-8

List of Events:

- 50 m run
- tennis ball throw
- long jump (choose either standing or running for your school)
- 400 m run (for all ages)
- 800 m run (for Class A and B)
- 1600 m run (for Class A participants only)

Educational Activities:

1. Opening and Closing Ceremonies - e.mail exchange. On the Opening Day, each participating school should send a letter to each and every other participating school, wishing them good luck. On the Closing Day, letters of Congratulations should be sent to every other participating school. These letters can include additional information and questions as desired, and potentially lead to establishing permanent keypal relationships with these other schools. A list of internet/bitnet addresses of all participants will be mailed out prior to the Opening Ceremonies and a special mailing list or listserve will be available so that messages can be received by those with e.mail only capabilities.
2. During the weeks prior to the TeleOlympics, schools are encouraged to post weekly reports on the progress of training of their athletes, weather conditions, or additional information of interest. This could include, but not limited to, stories of the Ancient Olympics, word searches in any language with the subject being the Olympics, and/or interviews/stories of athletes from their community who have participated in the Olympics. Individual athletes are also invited to share their training programs and results.
3. Participating schools may also begin to contact each other and exchange private e.mail as the registrations get posted to the Parade of Nations/Schools area of the TeleOlympics menu in Academy One. Regular updates of who is involved will be mailed to those participants who have only e.mail contact with Academy One.
4. The top three winners in each of the events and in each of the boys and girls age classifications can have their names, school identifications, national flags and a short biographical sketch posted to the Victory Platform. Teachers

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will be responsible for supplying the biographical sketches of all winners. It is advised that these biographies be one of the educational activities that each student prepares in case they are a winner. They can also be used to exchange with students in other countries.

As might be expected, this is an extremely popular activity.

Simulations

On-line simulations are the telecomputing project type that requires the most coordination and maintenance, but the depth of learning possible and task engagement displayed by participants can convince project organizers to spend the additional time and effort necessary to make them work. Notable examples of successful on-line simulations include *Centennial Launches*, sponsored by the Cleveland Freenet's *Academy One* project, which was described in an electronic newsletter as follows:

CENTENNIAL LAUNCHES: Simulated Space Shuttle Program - At the core of these launches is a permanent full-scale mock-up of a space shuttle (called the "Centennial") complete with "Mission Control" which is located at University School in Shaker Heights, Ohio (Cleveland area). Schools around the world take various roles in each simulated space shuttle mission. These could include being another shuttle (doing a docking maneuver), secondary mission control, alternate landing sites (weather stations), solar disturbance observatories, and so forth.

Coordination and communications between the shuttle's mission control and other schools will be conducted through distributed conferences on the individual NPTN systems. Electronic mail is sent back and forth, hourly reports are posted, even real-time electronic "chats" can occur between mission control, astronauts, and supporting units.

Another kind of space mission simulation, coordinated by Chris Rowan and Penny Bond from Texas, is shared via a LISTSERV discussion group, and employs a number of different types of synchronous and asynchronous communications media to help students participate in the experience.

ISSS on LISTSERV@JHUVM.BITNET -
International Student Space Simulations

International Student Space Simulations is an exciting, dynamic teaching method that challenges students to design, construct, and live in a self-contained habitat for an extended period of time. It is a multilevel, interdisciplinary, action-based program that enables students to apply what they have learned towards the successful "launch," "orbit," and "splashdown" of an extended space simulation.

Throughout the simulation, student astronauts communicate with Mission Control technicians (also students) via 2-way radio, modem-equipped computers, and/or VCR cameras and monitors. Inside the habitat, astronauts perform experiments, work on previously recorded lessons, engage in simulated docking maneuvers, retrieve and repair satellites, prepare meals . . . The possibilities are endless.

Finally, an exciting series of simulations in international events and issues and global conflict resolution was sponsored by Catherine Schreiber-Jones and David Crookall of the University of Alabama. Called *Project IDEALS*, these simulations placed participating students in the roles of "high-level negotiators representing various countries at an international conference," who must, for example, "hammer out the text of a treaty governing the emissions of CFCs, the use of the ocean's resources, or the future of Antarctica." These exchanges were supported by remote access of sophisticated simulation management software called *Polnet II*, which was located at the University of Alabama.

Social Action Projects

It should be no surprise to global citizens living at the end of the 20th century that the Internet can serve as a context for "humanitarian, multicultural, action-oriented telecommunications projects" which involve the future leaders of our planet: our children. The *PLANET Project* ("People Linking Across Networks"), for example, involves a consortium of large Internet-accessible educational networks from which representatives are working together to create collaborative, meaningful social action projects in which children have primary responsibility for learning about and helping to tackle global issues of critical importance. PLANET participants have written petitions to the United Nations to protest conditions in Yugoslavia, brainstormed ideas about how to address the starvation and political unrest in Somalia, and planned for and carried out fundraising efforts to help to purchase "rope pumps for villages in Nicaragua that do not have access to clean water."

Seventh grade students from Edmonds, Washington decided to offer an incentive to other students to become involved in creative problem solving for global challenges by establishing the *World Connections Fair.* This effort was "designed to encourage and empower kids to be actively involved in making the world a better place." The program is described, in part, by its creators as follows:

> Kids often feel that the world is all mixed up, but feel helpless to do anything about it. They can see answers to some of the world's most pressing problems, but wonder who would ever listen to them. The World Connections Network (WCN) would like them to know that they have the power to make the world a better place. This program is designed to help kids transform their creative thinking into actions that make a difference in their world. It will help them learn the skills they need to solve the social problems they choose.
>
> As an incentive to be socially active in their communities, the WCN sponsors the World Connections Fair creative problem solving contest and the prize is a trip to Disneyland.
>
> In classrooms, youth organizations, church groups or just a few friends, kids work in teams of four or more with adult advisors. Together they think about all the problems with the world - in their communities, country or anywhere. The team reviews the list of Project Focus Categories and chooses one. Now they learn how to change their world. With help and advise from their advisors and the World Connections Network, they plan and conduct their project.
>
> Afterwards, they prepare a project presentation, using any medium they choose, and submit it to the World Connections Fair selections team. Two teams will be selected worldwide to participate in the Fair from each Project Focus Category. Travel arrangements to the Fair will be provided for four members chosen to be their team's Ambassadors to the Fair.
>
> [material deleted]
>
> The shape of the world is in their hands. Whether they're concerned about being responsible consumers, protecting endangered animals, feeding hungry people or stopping the violence in their communities, kids do have the power to change the world. They can make a difference.

Finally, students participating in the National Science Foundation's *Global Schoolhouse Project* , which was co-sponsored by 30 different organizations, used a variety of telecommunications media to share the results of their environmental research and problem-solving. Carl Malamud described project activity (in part) as follows:

> For the past six weeks, schoolchildren in grades 5-8 have been conducting original

93 BEST COPY AVAILABLE

research on the environment in their communities. With the help of a curriculum developed by the FrEdMail Foundation, they have conducted surveys and tests, have prepared videotapes and other materials, and have read Vice President Gore's "Earth in the Balance." The children are located in schools in Oceanside, California; Knoxville, Tennessee; Arlington, Virginia; and London, England.

Using the Internet, the children have been exchanging messages with each other using FrEdMail. They have also been using Cornell University's CU-SeeMe videoconferencing software and Sprint audioconference bridges to communicate with each other.

On April 28th, they will conduct a videoconference on the Internet to brief each other and national leaders on what can be done about the environment. Several prominent leaders have been invited to participate, and a variety of dignitaries and members of the media have been invited to observe.

Technically, the April 28 videoconference consists of CU-SeeMe running on Macintosh computers donated by Apple equipped with a camera. CU-SeeMe sends a video stream to a Sparcstation donated by Sun which acts as a central reflector, sending the video from one site to the other sites participating in the conference.

The potential for multi-disciplinary, forward-thinking, truly collaborative learning when involved in projects such as these is awesome. It is also interesting to note that many of the more sophisticated, interdisciplinary, "real life" online problem-solving projects focus their participants' attention upon the problem to solve (the "opportunity in work clothes"), rather than upon the telecommunications technologies used to share information among coworkers. This clear emphasis upon curricularly-integrated *learning*, rather than the *technologies* that can facilitate that learning, is perhaps one of the characteristics that makes Internet-based problem-solving projects so potentially powerful.

An Educational Telecomputing Archive

Would you like to learn more about any or all of these innovative educational telecomputing projects? If so, there is an Internet file archive subdirectory made just for you. Use the **ftp** command (described in the December/January 1992-93 "Mining the Internet" column) from your electronic account, or the **ftpmail gateway** service (presented in the April 1993 "Mining the Internet" article) via electronic mail to anonymously access the Texas Center for Educational Technology's server at this address:
tcet.unt.edu
Once connected, look in this subdirectory path:
pub/telecomputing-info/ed-infusions
...to find additional details on many of the activities mentioned above.

If you would like to share *your* ideas for telecomputing activities with me (and therefore with other visitors to the **tcet.unt.edu** archive), please send your activity descriptions, via electronic mail, to the Internet address listed below.

[Judi Harris, jbharris@tenet.edu; Department of Curriculum and Instruction; 406 Education Building; University of Texas at Austin; Austin, TX 78712-1294.]

Other "Mining the Internet" columns are available on the Learning Resource Server at the College of Education, University of Illinois, Urbana-Champaign.

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Appendix 2

Reviewed by: _____

KENTUCKY MIGRANT EDUCATION
CERTIFICATE OF ELIGIBILITY

Revised 5/21/96

Appendix 2 - 1

DISTRICT I.D.

KY | | | | |

SCHOOL DISTRICT NAME

Section I: Child Data (List all children in family)

Last	First	M	Sex	Birthdate	Race	Birthplace (City, County, State, Foreign Country)	GR	Student Number

Section II: Family Data

me of Person(s) Responsible for the Child or Self-Eligible Youth:

(First) (Relation)

(First) (Relation)

2. Address:

(City) (State) (Zip)

Section III: Eligibility Data

1. QAD	(Year)	(Month)	(Day)
2. RES	(Year)	(Month)	(Day)
3. ENR	(Year)	(Month)	(Day)

4. The Child(ren) moved ☐ with ☐ to join ☐ on his/her own

5. To enable that person(s) to obtain or seek: ☐ temporary or ☐ seasonal employment in ☐ agriculture or ☐ fishing related activities.

alifying Activity:

7. Comments:

8. Directions to home:

9. Phone Number: ( )

Moved From: _____

(City) (County) (State)

11. Moved To: _____

(City) (County) (State)

n IV: Permission Statement

y that the above information is correct to the best of my knowledge. The Migrant Education Program has been explained to me. that my child(ren)'s record(s) will be available for me to see and obtain if I so desire. I understand fully that these records will nferred to other schools in which my child(ren) intend(s) to enroll and that certain data may be used by the migrant program in ng reports to meet state or federal requirements.

ure of Parent _____ Date _____

Section V: Certification

I certify that based upon the above information and application definition, the child(ren) listed are eligible for the Migrant Education Program.

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Coordinator's Signature _____ Date _____

n VI: Recruiter's Statement

ove information is correct to the best of my knowledge. The person signing has been informed of the Family Educational Rights and Privacy Act, the procedures of the school district, the Migrant Education Program and that their child(ren)'s record(s) may be sent to chools where they intend to enroll. Based on the interview, the interviewer has determined that the qualifying work is an important part of providing a living for the worker and his or her family.

Recruiter's signature _____ Date _____

Instructions to filling out Certificate of Eligibility

1. Give 4 letter District ID.

2. Give School District Name.

3. Section I: List all eligible children in family
   a. Start with last name
   b. MI - Middle Initial
   c. Sex - M or F
   d. Birthdate - numerical (85/04/09)
   e. Race
      1-American/Indian
      2-Asian or Pacific Islander
      3-Black, not Hispanic
      4-Hispanic
      5-White, not Hispanic
   f. Birth Place
      City, County, State, Foreign Country only if born outside USA
   g. GR - Grade Level
      P0 - P5 (1 day - 5 years)
      K - 12 (Kindergarten - 12th grade)
      UG - Ungraded
   h. Student Number if child(ren) has/have been in district before

4. Section II: Family Data
   (1) Male Parent/Current Guardian's name & relationship; Female Parent/Current Guardian's name & relationship
   (2) Current Address; current home address (Zip Code required)

5. Section III: Eligibility Data
   (1) QAD - Qualifying Arrival Date - Date Parent/Guardian arrived in district (Year, Month, Day)
   (2) Residency Date (Year, Month, Day)
   (3) Enrollment Date - Date Child(ren) enrolled in school
   (4) Check appropriate boxes only.
   (5) Employment is either temporary or seasonal and employment is either agriculture or fishing related
   (6) Qualifying activity - Be very specific as to qualifying activities.
   (7) Comments: Length of anticipated employment and how activity is principal means of livelihood
   (8) Optional
   (9) Optional
   (10) Moved from: city, county and state (county required if within Kentucky.)
   (11) Moved to: city, county and state (county required if within Kentucky.)

6. Section IV: Permission Statement, Signature of Parent, Parent must sign and date.

7. Section V: Certification Coordinator or Advocate (who is in charge of program) must sign and date.

8. Section VI: Recruiter's statement - Recruiter who has received training must sign and date.

93

STATE ALLOCATIONS

Congress appropriates funds each year for the MEP. The Department sets aside a portion of each year's appropriation for coordination activities authorized under Section 1308(c) of the ESEA. The remainder of the appropriation is then available for allocation to the states.

Funds are allocated to the states through the funding formula provided in Section 1303 of the statute. This formula is based on (1) the estimated full-time equivalent (FTE) number of migrant children aged 3 through 21 who reside in each state full time and part time during each calendar year, adjusted to account for children served in summer and intersession programs as required under Section 1303(e)(3); and (2) the per pupil expenditure (PPE) for each state.

In determining state allocations, the Department --

Step 1. Determines each state's total count of migrant children for the previous calendar year by adding together the estimated number of migrant children aged 3 through 21 who reside in the state full time and the estimated FTE number of migrant children who reside in the state part time. The secretary will issue further guidance for states on how to determine this number and how to take into account children served in summer and intersession programs.

Step 2. Obtains the PPE data for each state from data provided by the states to the National Center for Education Statistics (NCES).

Step 3. Multiplies each state's PPE, as determined in Step 2, by 40 percent in order to determine the state's formula PPE. Compares the state's formula PPE with the average expenditure per pupil in the United States, and --

A. In cases where a state's formula PPE is less than 32 percent of the national PPE, raises the state's formula PPE to 32 percent of the national PPE.

B. In cases where a state's formula PPE is more than 48 percent of the national PPE, reduces the state's formula PPE to 48 percent of the national PPE.

C. In cases where a state's formula PPE falls within the ranges described in A and B above, no adjustments are made.

Note: The statute requires additional adjustments in Puerto Rico's formula PPE.

Step 4. Multiplies the amounts determined in Step 1 and Step 3 for each state to determine the maximum amount to which each state is entitled under the formula.

Step 5. Ratably reduces the amount reached in Step 4 to the amount appropriated to determine the final state allocations.

IDENTIFICATION AND RECRUITMENT

Finding and enrolling eligible migrant children is a cornerstone of the MEP, and its importance cannot be overemphasized. Identification and recruitment of migrant children is critical because:

- The children who are most in need of program services are often those who are the most difficult to find.
- Many migrant children would not fully benefit from school, and in some cases, would not attend school at all, if the SEAs did not identify and recruit them into the MEP. (This is particularly true of the most mobile migrant children who may be more difficult to identify than those who have settled within a community.)
- Children cannot receive MEP services without a record of eligibility.

It is crucial that local projects develop effective recruitment networks, raise awareness of and support for the program throughout the school district and the community, and ensure that migrant families find the schools accessible and welcoming.

The SEA is responsible for the identification and recruitment of all eligible migrant children in the state, including securing pertinent information to document the basis of a child's eligibility. Often SEAs or their operating agencies record eligibility data, which is obtained by interviewing the person responsible for the child, or (where the child moves on his or her own) the child him or herself, on a Certificate of Eligibility (COE). The SEA is responsible for implementing procedures to ensure the correctness of eligibility information.

This section addresses the ways in which SEAs and operating agencies can meet their responsibility to correctly identify and recruit all eligible migrant children residing in their state. ***This guidance is intended to provide broad, guiding principles related to identification and recruitment (I & R), and is not intended to cover every particular situation a recruiter might encounter.*** Specific information on establishing a child's eligibility for the MEP, including information on determining if the qualifying work constitutes an important part of providing a living for the worker and his or her family, is found in the "Student Eligibility" section of this document.

An active statewide I&R process underlies the SEA's responsibilities to:

- Determine the number of migrant children residing in the state (Section 1304(c)(7));
- Determine areas of the state to be served (Sections 1304(b)(4) and (5));
- Identify and address the special educational needs of migrant children, including preschool migrant children, through a comprehensive plan for needs assessment and service delivery (Section 1304(b)(1));
- Serve migrant children according to the priority for services established in Section 1304(d) (consider their relative educational needs and educational interruption); and
- Determine the types of services that are most responsive to the special educational needs of the state's migrant children to allow them to meet the same challenging state content and performance standards *all* children are expected to meet (Sections 1304(b)(1) and (2)).

HOW TO IDENTIFY MIGRANT CHILDREN

Each state is responsible for determining the number of migrant children residing within its boundaries. This can be a difficult task since the children who have the most need for services may not attend school. Furthermore, language and cultural barriers may make families hesitant to advocate for services on behalf of their children, particularly if they are not accustomed to looking for assistance from their child's school. Also, the locations where migrant families reside may change due to changes in agriculture or in response to natural disasters affecting crop production. Therefore, it is important that states actively seek out migrant families and develop comprehensive recruitment plans that include both school- and community-based activities.

EXAMPLES OF STRATEGIES FOR IDENTIFYING MIGRATORY CHILDREN

- ✓ Identify and map the locations of agricultural and commercial fishing areas. The U.S. Departments of Agriculture, Labor, and Commerce, and the State Office of Employment Security, can assist in many cases. Regional and local MEP staff may wish to contact individual growers and other agricultural and fishing employers.

- ✓ Obtain and maintain current information on the State's agricultural and fishing activities, and determine for each (1) areas of the State in which concentrations of migratory labor exist; and (2) peak employment periods. Ensure that recruitment staff are deployed in areas where concentrations of migrants are likely to reside.

- ✓ Coordinate with officials who administer the Women, Infants and Children (WIC), Migrant Health, Migrant Labor, Migrant Headstart, Community Service Block Grant programs, and other programs about the locations of migrant workers and families whom those programs serve. In some locations recruiters canvas local churches, ESL classes, farmworker unions, legal aid agencies, and local businesses like laundromats, shopping malls, grocery stores, movie theaters, and restaurants to find migrant families.

- ✓ Locate and maintain current lists of migrant housing in each area of the State. State and Federal Departments of Health (or Health and Human Services) and Labor may have lists of migrant camps.

- ✓ Evaluate periodically the effectiveness of the State's identification efforts, and revise procedures as necessary.

Once the SEA has successfully used methods such as these to identify migrant children residing in the state, it might be able, in succeeding years, merely to update its information on the location of migrant children. It could do so, for example, through periodic spot-checks for changes in agricultural or fishing activities, housing patterns, or non-MEP program participation.

PRIMARY RESPONSIBILITIES OF AN INTERVIEWER/RECRUITER

The recruiter's primary responsibilities are to: (1) obtain and interpret information provided by parents, guardians, and others; and (2) record, accurately and clearly, information that establishes a child to be a migrant child under the statutory definition in Section 1309(2), and the regulatory definitions in 34 CFR 200.40. *In all cases, the recruiter, rather than the individual interviewed, determines the child's eligibility on the basis of statutory and regulatory definitions and SEA policies.* Because the SEA is ultimately responsible for all MEP eligibility

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determinations, the SEA, in conjunction with the LEA, should take care that the interviewer is knowledgeable about the statutory and regulatory requirements for eligibility and that quality control procedures are adequate to ensure that the student's eligibility cannot be questioned (quality control is discussed in the eligibility section). *Any time an interviewer has questions about a child's eligibility for the MEP, the situation should be described in the comment section of the COE and referred to a higher-level official (e.g., immediate supervisor) within the state.*

EXAMPLES OF KNOWLEDGE RECRUITERS NEED TO BE EFFECTIVE

- ✓ Basic MEP eligibility requirements;
- ✓ Local agricultural and fishing production and processing sites;
- ✓ Languages spoken by migratory workers;
- ✓ Cycles of seasonal employment and temporary employment;
- ✓ Local growers and fishing companies;
- ✓ Local roads and locations of places where migrants typically live;
- ✓ MEP services offered by the local operating agency;
- ✓ The workings of the local school system; and
- ✓ Other agencies that can provide services to migratory workers and their families, such as Migrant Health, Migrant Labor, WIC, and Migrant Headstart.

STUDENT ELIGIBILITY

Children who are migrant and have had the basis for their MEP eligibility properly recorded, may receive MEP services. According to Sections 1309 and 1115(b)(1)(A) (which applies by reference) of the statute and 34 CFR 200.40(c) and (e) of the regulations, a child is eligible for MEP services if he or she:

1. (a) Is younger than 22 (and has not graduated from high school or does not hold a high school equivalency certificate), *but* (b), if the child is too young to attend school-sponsored educational programs, is old enough to benefit from an organized instructional program[2] (Section 1115(b)(1)); *AND*

[2]For example, a newborn infant would probably not be considered old enough to benefit from an organized instructional program. Moreover, while a child under the age of three may be served, that child does not generate funding credit for State funding purposes.

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2. Is a migrant agricultural worker or a migrant fisher (as defined in Section 1309 of the statute) ***OR*** has a parent, spouse, or guardian who is a migrant agricultural worker or a migrant fisher; ***AND***

3. Performs, or has a parent, spouse, or guardian who performs, qualifying agricultural or fishing employment as a principal means of livelihood (34 CFR 200.40(c), (e), and (f)); ***AND***

4. Has moved within the preceding 36 months to obtain,[3] or to accompany or join a parent, spouse, or guardian to obtain, temporary or seasonal employment in agricultural or fishing work; ***AND***

5. Has moved from one school district to another; ***OR***

   In a state that is comprised of a single school district, has moved from one administrative area to another within such district; ***OR***

   Resides in a school district of more than 15,000 square miles, and migrates a distance of 20 miles or more to a temporary residence to engage in a fishing activity. (This provision currently applies only to Alaska.)

PROCEDURES FOR DOCUMENTING ELIGIBILITY

States must record the basis on which eligibility determinations were made for each child who is enrolled in the MEP. Generally, this is done by an individual authorized to recruit for the MEP who records, usually on a single COE form, all eligible children in a family who arrived on the same date in the state or district where the child, parent, guardian, or spouse, obtained or sought qualifying agricultural or fishing work. It is advisable to maintain a separate record for each child of a family who has a (l) different qualifying arrival date (QAD); or (2) a different residency date (the terms are discussed later in this section).

The only time a state would need to complete a new COE is when an eligible child is identified for the first time in that state. The state would also need to document any move that extends the child's eligibility, either by completing a new COE or amending the current COE. *States need not complete new COEs for children who have not moved.*

---

[3]An individual who moves to *seek* qualifying employment would be considered to have made a qualifying move regardless of whether the employment is actually obtained.

QUALIFYING EMPLOYMENT

Any temporary or seasonal agricultural or fishing work (as defined in CFR 200.40) can be considered qualifying employment if it constitutes a principal means of livelihood.

Principal Means of Livelihood. To be qualifying, *an agricultural or fishing activity must play an important part in providing a living for the worker and his or her family* (34 CFR 200.40(c), (e) and (f)). The intent of this regulation is to focus MEP services on children who are truly migrant, that is, are members of families who depend on migrant agricultural or fishing work as an important part of their livelihood. The work need not be the "most important" or the "only" type of work performed by family members during the year. Nor does it have to provide the largest portion of the family's income or employ those working for a majority of their time. In all cases, however, states and recruiters should establish procedures that don't burden parents and also don't lead to misidentification of migrant children.

If during the parent interview, the interviewer learns that the qualifying worker has another occupation (in addition to agricultural or fishing work), the interviewer should confirm that the agricultural or fishing work is important to the family's livelihood.

EXAMPLES OF DETERMINING PRINCIPAL MEANS OF LIVELIHOOD

✓ A parent is a commercial fisher during the summer, but also works as a janitor in the school the remainder of the year. When the interviewer visits the parent, she asks him "Is this fishing work important for providing a living for your family?" The parent tells her that without the revenue he earns from fishing, he doesn't know how his family would make ends meet. Based on his verbal affirmation and the interviewer's belief that his statement is credible, she concludes that fishing is an important part of providing a living for the family. She qualifies the children for MEP services.

✓ The same interviewer visits a family that plans to reside in the school district for four weeks while harvesting cherries. She asks the family what they do to earn a living during the rest of the year. The mother tells her that they follow other seasonal crops. The interviewer qualifies the children for the MEP.

✓ A father who is unemployed moves to a northern state with his children after hearing that he can find field work there. When he arrives at his destination, he looks all over for work but finds that the crop is poor this year and work is not available. Since the father had no other employment and the work he was seeking would have been a principal means of livelihood for the family, the interviewer qualifies the children for the MEP.

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Interviewers should base their determination of whether or not work is a principal means of livelihood on interviews with the child (where the child is the worker), or the child's parent or guardian, and should record that determination on the COE. Since there is no income test for eligibility under the MEP, neither the worker nor his or her family is expected to maintain, nor is the SEA or its operating agency expected to review, written documentation on income or work history as a condition of determining the eligibility of children for the MEP. Moreover, when conducting eligibility interviews, interviewers should never ask the amount of income derived from employment. Rather, interviewers should focus on whether the agricultural or fishing work is an important part of providing a living for the family. Absent obvious evidence to the contrary, the interviewer can rely on any information the worker or employer or other relevant person provides and on his or her judgment of that information to make this determination. In cases where a statement made by the worker as to the family's reliance on the agricultural or fishing work does not seem reasonable to the interviewer in light of other, non-qualifying work, the interviewer should probe further. If the interviewer continues to question the reasonableness of the worker's statement, the interviewer should find the child to be ineligible or refer the situation to a higher level official within the state.

An Agricultural Activity is --

1. *"Any activity directly related to the production or processing of crops, dairy production, poultry, or livestock for initial commercial sale or personal subsistence" (34 CFR 200.40(a)(1)).* (Underlined words are defined below.)

Production. The production of crops, dairy products, or animals includes, among other things, planting, cultivation, or harvesting crops[4] or preparing land for such activities, raising or milking dairy farm animals, gathering eggs, and raising livestock for eventual slaughter (but not for sport or recreational use). Planting, cultivating, and harvesting fruits and vegetables (e.g., apples, oranges, grapes, tomatoes, potatoes, celery, etc.) are the major activities which employ migrant workers.

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[4]Crops--The following are examples of activities that involve the "production" of crops:

Planting - oranges, apples, trees, catfish, oysters
Cultivating - cotton, beans, onions, oysters
Pruning - grapes, trees, hops
Thinning - sugar beets, tomatoes, cotton
Weeding - lettuce, tomatoes, celery
Fertilizing - peanuts, apples, oranges, cotton, lettuce
Irrigating - cotton, carrots, tomatoes
Harvesting - picking or gathering of products, agricultural and fishing

In addition to foods and fiber (e.g., cotton), the term crop includes nursery plants, Christmas trees, flowers, turf, fibers, and similarly grown items.

Processing means working with a raw agricultural or fishing product that will become a more refined product. Processing ends at the point where the crop, dairy product, poultry, or livestock ceases to be recognized as the entity that began to be processed and becomes part of a more refined product (e.g. potato soup, apple pie, macaroni and cheese, chicken pot pie, beef stew) or when the product (e.g. fresh packaged chicken, bagged grapefruit, boxed broccoli) is readied for *initial commercial sale* to the next stage processor, the wholesaler, the retailer, or the consumer.

Initial Commercial Sale can occur at the conclusion of the production or processing activity(ies), when the product or processed product is sold: (1) for refining to the next stage processor; (2) to the wholesaler; (3) to the retailer; or (4) directly to the consumer. Processing a product for "initial commercial sale" may occur at the same site or at multiple sites.

Personal Subsistence means that a worker and his or her family consume the crops produced or the fish caught in order to survive.

2. ***"Any activity directly related to the cultivation or harvesting of trees" (34 CFR 200.40(a)(2)).***

EXAMPLES OF CULTIVATION OR HARVESTING ACTIVITIES

"Cultivation or harvesting" could include soil preparation, planting, tending, pruning and felling, Christmas tree cutting and bundling, and planting of tree seedlings for restoration of forests. Normally, once the trees are ready to be transported from a harvesting site to a processor (sawmill), there is no longer a sufficiently direct involvement in cultivation or harvesting of trees. Therefore, transporting trees would not qualify as an "agricultural activity." Moreover, any activity directly related to the processing of trees is not an agricultural activity.

3. ***"Any activity directly related to fish farms" (34 CFR 200.40(a)(3)).***

EXAMPLES OF FISH FARMS

A "fish farm" can be a tract of water reserved for the artificial cultivation of fish or shellfish, such as catfish, eels, oysters, or clams. The fish are artificially cultivated, rather than caught in open running water as they would be in a "fishing activity."

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A Fishing Activity is --

> *"...any activity directly related to the catching or processing of fish or shellfish for initial commercial sale or personal subsistence" (34 CFR 200.40(b)).*

EXAMPLES OF FISHING ACTIVITIES

A "fishing activity" could include the catching, digging, trolling, or otherwise capturing or processing of clams, crab, halibut, herring, oysters, salmon, shrimp, trout, or other types of fish or shellfish.

Temporary Employment--employment related to agricultural or fishing activities that is not permanent and that usually lasts no longer than 12 months. Temporary employment does not always have beginning and ending dates at particular times of the year. Mending fences, digging irrigation ditches, plucking chickens, and other activities not dependent upon a natural cycle of events may occur at any time, and be for any length of time. Therefore, these jobs may be either permanent or temporary.

In a wide variety of situations, employment can readily be determined to be temporary or seasonal. Sometimes, however, while employment may be available to a worker on a year-round basis, the employment may still be temporary in the sense that, perhaps because of working conditions or intermittent periods of slack demand, the worker does not intend to remain at the job permanently, or otherwise is not likely to do so.

When deciding whether work is temporary, the interviewer should determine whether the work is likely to be available on a year-round basis. The basis of the individual's eligibility should be carefully documented so that the reasons for the determination can be readily understood.

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TESTS TO DETERMINE WHETHER AN AGRICULTURAL OR FISHING ACTIVITY QUALIFIES AS TEMPORARY EMPLOYMENT

1. The activity itself has a clearly defined beginning and end (e.g., digging an irrigation ditch, making packing boxes, building a fence) and is not one of a series of activities for the same employer that is typical of permanent employment; **OR**

2. The employer establishes a time frame for completion of the worker's tasks (e.g., the employer hires the worker for a three-month period); **OR**

3. An "industrial survey" establishes that, despite the apparent permanency of the work, the job may be considered temporary (see the following discussion); **OR**

4. The agricultural or fishing work might be permanent but the interviewer has specific reasons for believing that the worker does not intend to perform the tasks indefinitely (e.g., the worker states that he plans to leave the job after four months).

Seasonal Employment. Whether agricultural or fishing, seasonal employment is generally easy to determine since it is dependent upon natural cycles. In agriculture, for example, planting, cultivating, pruning, harvesting, and related food processing are seasonal activities. In commercial fishing, planting and harvesting of clams and oysters, fishing during seasonal runs of fish, and related food processing are seasonal activities. The production of meat and poultry may also be seasonal; for example, turkey production increases significantly prior to Thanksgiving.

INDUSTRIAL SURVEY

An "industrial survey" is an alternate way for an SEA to establish that work that could be perceived as year-round can be considered "temporary" for the MEP. Industrial surveys give States added flexibility by providing another way to document that employment is temporary.

In many situations, agricultural or fishing employment can readily be determined to be temporary or seasonal. Sometimes, however, while such employment may be available to a worker on a year-round basis, the employment may still be temporary in the sense that, perhaps because of working conditions or intermittent periods of slack demand, the worker is not likely to remain at the job permanently. An industrial survey provides flexibility in determining that an agricultural or fishing activity qualifies as temporary employment, for purposes of the MEP.

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An industrial survey is based on agricultural or fishing work-sites with employment practices that are comparable to the one at which the worker is employed, and demonstrate a significant probability that a worker *in a specific job category* will leave the place of employment within a short period of time; for example, a 50 percent turnover rate in a 12-month period, a 60 percent turnover in 18 months, or a 75 percent turnover in 24 months. Surveys are based upon evidence of a high degree of turnover, frequent layoffs without pay, a high incidence of part-time employment, or few or no opportunities for full-time employment. A new survey may (1) be conducted at least once every two years, (2) be based on work-sites with employment practices that are comparable to the one at which the worker is employed, and (3) demonstrate a significant probability that the worker will leave the place of employment within a short period of time.

ITEMS TO INCLUDE ON AN INDUSTRIAL SURVEY

1. The industry being surveyed (e.g., beef processing);
2. The individual employer (e.g., Beef Packers, Inc.);
3. Location of the workplace (e.g., Anytown, Iowa);
4. Description of unique characteristics that might affect employee turnover (e.g., size, working conditions, hours, management);
5. The job category (e.g., slaughtering);
6. The number of employees in the job category;
7. The turnover rate and how it was calculated;
8. How turnover information was obtained (e.g., the employer provided a computer printout of employment statistics);
9. The date the survey was conducted, the time period it covers, and pertinent explanatory comments (e.g., how precise and credible the information is believed to be); and
10. The reviewer's initials and date.

QUALIFYING MOVES

A move can be considered qualifying if:

1. It is from one school district to another (e.g., a move from a school district into territorial waters is not considered a qualifying move, regardless of distance traveled, unless the worker and child cross into a different school district);

2. The worker, as a result of the move, is seeking or engaged in qualifying employment; *OR*

   The worker moved to find qualifying work believed to be available, even though qualifying work was not found; *AND*

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5. The worker clearly did not move for the purpose of relocating on a permanent basis.

Children Who Do Not Move. Children (or spouses) of migrant agricultural workers or migrant fishers are not eligible for MEP services if the children (or spouses) themselves do not move from one school district to another, even if the parent or guardian moves. The MEP definitions provide that children must have moved before they can be eligible to be counted or served as migrant children under the MEP.

Children Identified After They Stop Moving. A child who was not identified when he/she was actively moving may be recruited after he/she settles out, provided that the SEA records the basis for determining that the child qualified as a migrant child during the preceding three years. In such a case, the child would retain MEP eligibility as a migrant child for the remainder of the three-year period, or until he or she (1) extends the eligibility period (e.g., makes another qualifying move); or (2) terminates eligibility (e.g., receives a high school diploma or its equivalent, or turns 22).

Previous Qualifying Moves. An SEA may identify and recruit a migrant child in the child's current State of residence based on a qualifying move that occurred in another state within the last three years. The interviewer must record the date on which the qualifying move occurred and the other information needed to establish the child's eligibility for the MEP. The child is then eligible for the remainder of the three-year period.

Moves From Other Countries. In order to explain a child's move from a country other than Mexico or Canada, the interviewer should summarize, generally as a comment on the COE, the reasons for believing the initial move from that country to the new location was made to enable the child, parent, guardian, or spouse to obtain (or seek) temporary or seasonal employment in an agricultural or fishing activity. Moreover, permanent relocations (e.g., relocating to the United States for political, economic, or personal reasons) are not considered qualifying moves. Any move made after the relocation would be qualifying if all eligibility criteria are met.

Moving Home. Workers who return home to ongoing employment after visiting a sick relative, vacationing, or for other personal reasons, have not made a qualifying move.

OTHER KEY TERMS FOR ESTABLISHING ELIGIBILITY

Qualifying Arrival Date is the date the family unit or the child (where the child is the worker) arrive(s) at the place where qualifying work is sought. (See guidance on "to join" moves for information on children whose move either precedes or follows the parent, guardian or spouse's move).

- For **interstate** migrant children (children who move from one state to another), this is the date they arrive in the *state*;

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state has only one school district, from one school administrative area to another) this is the date they arrive in the *school district* or *school administrative area*.

Residency Date is the date the child(ren) enters the school district. The residency date and the qualifying arrival date (QAD) are the same only if the most current move enables the worker to obtain or seek qualifying agricultural or fishing employment. A subsequent move for a reason other than obtaining qualifying work would create a new residency date, but would not change the qualifying arrival date. The residency date is always the same as or after the date of the qualifying arrival date.

To Join Date is the date *either* before *or* after the date the parent, guardian, or spouse moves to seek qualifying work. When the child's move precedes the worker's move, the qualifying arrival and residency dates are the date the *worker* arrived. When the child's move follows the worker's move, the qualifying arrival and residency dates are the date the *child* arrived. As a rule of thumb, the child's move should be within a year of the worker's move.

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Most COEs include a comment section. Interviewers often add comments to the COE that clarify the reasons for the eligibility determination so anyone who later reviews the form can understand why the interviewer found the child to be eligible. If a COE does not have a comment section, and an explanation is needed to clarify eligibility, comments can be attached to the original COE and maintained as a part of the official COE record.

CIRCUMSTANCES THAT WARRANT FURTHER EXPLANATION ON A COE

- ✓ The household is supported, at least in part, by nonagricultural/nonfishing work, but the qualifying work is still the principal means of livelihood.
- ✓ A "move" is of such brief duration or for such a short distance, or both, that one could question whether any migration had occurred (e.g., intra-city or intra-town move that is across school district boundaries).
- ✓ The worker did not obtain qualifying employment as a result of the move.
- ✓ The recorded agricultural or fishing activity may be unusual enough that a reviewer is unlikely to understand that it is a qualifying activity.
- ✓ The worker's qualifying move is from a country other than Mexico or Canada to a first place of residence in the United States.
- ✓ The worker's "activity" that is recorded on the COE could logically be part of a "series of activities" that, viewed together, would constitute permanent employment (e.g., mending fences and haying could be two parts of permanent ranching with one employer).
- ✓ The worker's recorded "activity" might be viewed by an independent review as either temporary or permanent employment (e.g., collecting eggs or milking cows).
- ✓ The interviewer has used the findings of an occupational or industrial survey to validate the eligibility determination.

While COE comments do not need to be extensive, the interviewer's comments should clarify, for anyone who later reviews the document, the circumstances that led the interviewer to believe that the child is eligible. Additional clarification is warranted in cases where standard information may not clearly establish the child's eligibility. The interviewer's statement may be prepared in any way the SEA specifies.

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In recruiting migrant children, the SEA and its operating agencies are responsible for ensuring the correctness of the information used to determine each child's eligibility under the MEP definitions in Section 1309(2) and 34 CFR 200.40. "Quality control" refers to the procedures that the SEA designs and implements for doing so. Without some type of quality control system, neither the SEA nor its operating agencies will have a reasonable basis for knowing whether the children who are recruited are, in fact, migrant children, and so cannot demonstrate accountability for their receipt of MEP funds.

The quality of a state's eligibility determinations is important both to programmatic decisions about who may and may not receive MEP services, and to fiscal decisions about the size of the state's MEP allocation. SEAs should implement quality control procedures so that the Department and the SEA have confidence in the information used to make decisions.

Quality control procedures complement a system of identification and recruitment where interviewers make thorough, reasonable, and consistent eligibility determinations. If these determinations are audited, the SEA's evidence that it has implemented quality control procedures can help to resolve audit concerns, as well as lessen the auditor's need to re-interview children, spouses, parents, or guardians to determine whether the state's COEs contain accurate information.

SAMPLE QUALITY CONTROL PLAN

- ✓ Adequately train and guide interviewers in practical and, to the extent possible, uncomplicated ways to determine student eligibility;
- ✓ Implement a formal process to review and ensure the accuracy of written eligibility information;
- ✓ Plan and implement a process to ensure the quality of interviewers' eligibility decisions;
- ✓ Develop and distribute both a local and a state-level process for resolving eligibility questions; and
- ✓ Periodically evaluate the effectiveness of recruitment efforts and revise procedures, if necessary.

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The statute permits programs to continue to serve particular students whose eligibility has ended but who still have unmet needs. These children no longer generate MEP funds for the state, however, and the state is not required to continue serving them. Situations in which a child may continue to be served include the following:

- A child who ceases to be a migrant child in the middle of a project or school term is still eligible to receive MEP services until the end of that school term (Section 1304(e)(1));

- A child who is no longer a migrant child may continue to be served for an additional school year, providing that comparable services are not available through other programs (Section 1304(e)(2)); and

- Secondary school students who were eligible for MEP services in secondary school may continue to be served through credit accrual programs until they graduate (Section 1304(e)(3)).

SAMPLE CERTI[illegible]ATE OF ELIGIBILITY

FAMILY DATA

1. Name and Address of 1) Person Responsible for the Child *OR* 2) Self-Eligible Youth Legal Parent (if not named above):_____	2. Name(s) of 1) the person from whom the information was obtained, and 2) th person who was informed of the Family Educational Rights and Privacy Act and that the child(ren)'s records may be sent to other schools where the child intends enroll:

CHILD DATA

3. Name of Child / Youth	4. Sex	5. Birthdate

ELIGIBILITY DATA – The children listed moved...

6. From (school, district/city, state, country)	7. To (state or school district)	8. Arriving (Qualifying Arrival Dat
9. The child(ren) moved ☐ with ☐ to join ☐ on his/her own	10. ☐ Parent ☐ Guardian ☐ Spouse ☐ Self Name:	
11. To enable that person to obtain or seek ☐ Temporary ☐ Seasonal *AND* ☐ Agricultural ☐ Fishing employment Qualifying Activity:		12. Residency Date States with stopover sites must record the departure dat

13. Identify and describe other work (in addition to agricultural or fishing work), *if any*, in which household members are engaged.

14. Comments

15. Based on the interview, the interviewer has determined that the qualifying work is an important part of providing a living for the worker and his or her family. Interviewer:_____ Date:_____	18. Reviewer Initials:_____ Date:_____

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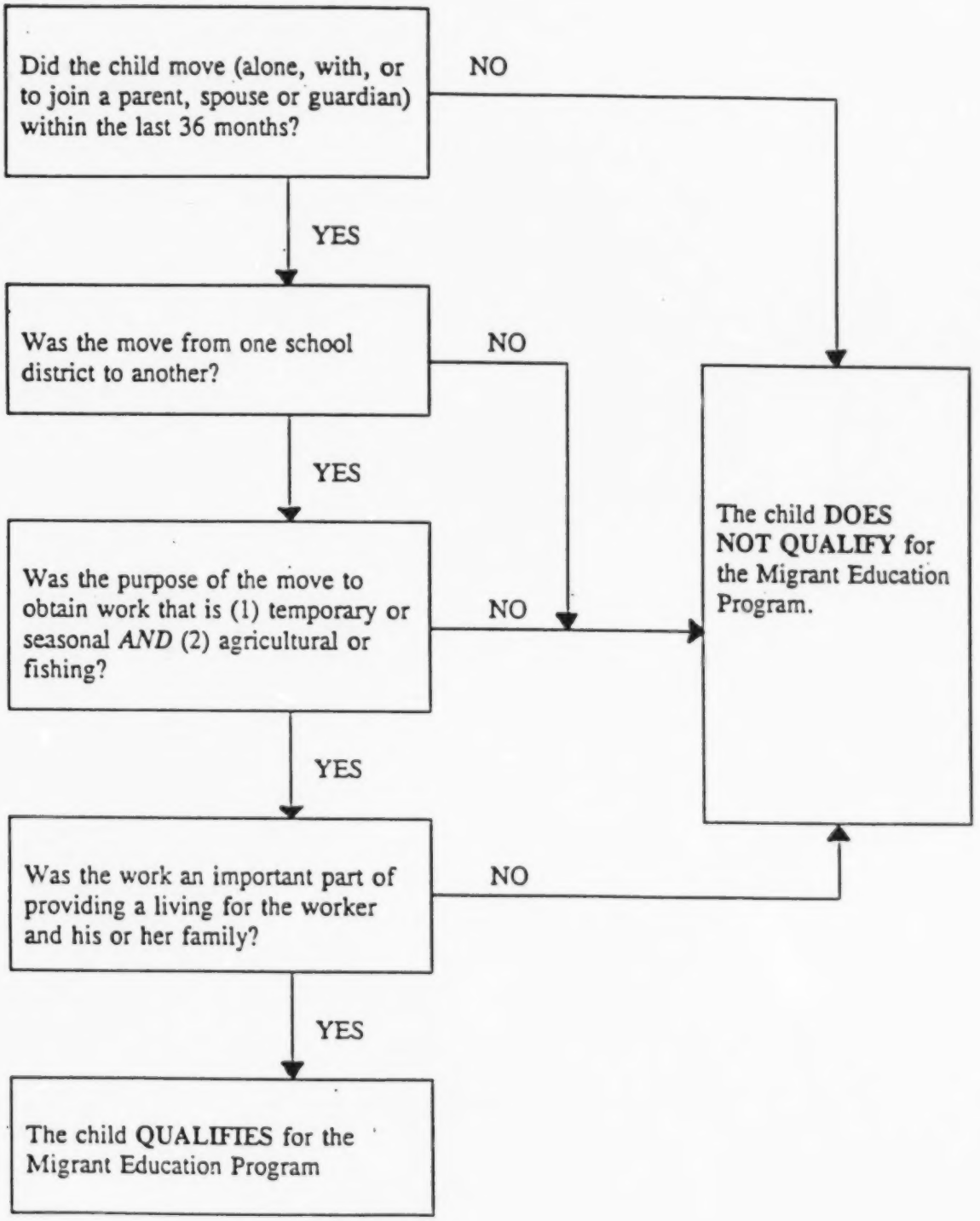
ELIGIBILITY FLOW CHART


Did the child move (alone, with, or to join a parent, spouse or guardian) within the last 36 months?
NO
YES
Was the move from one school district to another?
NO
YES
Was the purpose of the move to obtain work that is (1) temporary or seasonal *AND* (2) agricultural or fishing?
NO
YES
Was the work an important part of providing a living for the worker and his or her family?
NO
YES
The child **QUALIFIES** for the Migrant Education Program
The child **DOES NOT QUALIFY** for the Migrant Education Program.

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As both an essential planning instrument and a tool for forging links to other programs and to state and local educational reform plans, the comprehensive needs assessment and service delivery plan forms the core of the new MEP. The requirements for such plans under Section 1306 clearly envision a process by which each state determines how best to fit services needed by migrant children into the state's comprehensive education reform plan developed under Goals 2000, or the plans developed by the state under other parts of the ESEA.

NEEDS ASSESSMENT COMPONENT

A comprehensive needs assessment is based upon the best available information regarding educational services and comprehensive services (e.g. health, dental, transportation, counseling) needed by migrant children in the context of helping them achieve the state content and student performance standards.

EXAMPLE OF A PROCESS FOR IDENTIFYING CHILDREN TO SERVE

- ✓ Identify children who meet the statutory definition of a migrant child and are expected to reside in the area (statewide or local) that the agency serves;
- ✓ Establish objective, educationally related criteria for selecting children to be served following the service priorities contained in Section 1304(d);
- ✓ Uniformly apply those educational criteria in selecting students to be served in each grade level and instructional area in which the project will focus;
- ✓ Determine (1) the educational needs of the children to be served with enough specificity to enable the project to focus on the most pressing needs; and (2) the resources that will be necessary to meet these needs; and
- ✓ Determine the focus of the program to be provided (i.e., instructional areas and/or grade levels) based on the best available information about the needs and characteristics of all identified children.

The comprehensive needs assessment is used to determine the general instructional areas and grade levels on which the service delivery plan will focus. However, since the approved application, whether program-specific or consolidated, is the basis for using MEP funds within the state, the SEA and its operating agencies must ensure that local procedures are consistent with state priorities. The only exception is where migrant funds are used to support a schoolwide program. Even when funds are used as part of a schoolwide effort, schoolwide programs must still meet the identified needs of migrant children that (1) result from the effects

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(2) document that services to address these needs have been provided.

Although the SEA cannot delegate its primary responsibilities to the local operating agency, the local operating agency is free to develop local assessment procedures provided that they are consistent with state priorities. These assessments may identify such critical elements as the specific needs of children by grade levels, academic areas in which the project should focus, instructional settings, materials, staffing, and teaching techniques.

Both a statewide and local needs assessment should be conducted annually, since specific needs of the population being served through the MEP program may change from year to year. Consequently, SEAs and operating agencies should modify their programs to reflect changes in the educational needs of migrant children who, during the project period, actually reside in the areas served. SEAs should then update their applications to reflect these changes.

SERVICE DELIVERY COMPONENT

The MEP's comprehensive service delivery plan is the vehicle by which a state and its local agencies (along with staff from other programs) plan and implement the coordinated and integrated services needed by migrant children in that state to meet the state's challenging content and student performance standards. The plan should provide the blueprint for actions to be taken by the state to provide a full range of services funded through the MEP and other sources to migrant children.

A comprehensive service delivery plan sets out clear goals to be achieved by the MEP and the outcomes expected of the migrant children in the state. A state's challenging content and student performance standards provide the basis for development of the program's goals and outcomes. The measurable goals established in the comprehensive state plan are the targets at which the state will direct services needed by migrant children to help them meet those state standards. *The outcomes identified in the comprehensive state plan provide the means against which to assess the success of the state's efforts, including the degree to which they have leveraged services from other programs in the state.* Information about the extent to which migrant children fail to meet the state's content and student performance standards can be used to redesign service delivery strategies for migrant children.

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In determining the size and recipients of MEP subgrants, SEAs must take into account the special educational needs of the state's migrant children (as addressed through a comprehensive needs assessment and service delivery plan described in Section 1306. Also see Section 1304(b)(5).) In addition, the state (and its operating agencies) is required to give priority for services to migrant children who are failing, or most at risk of failing, to meet the state's challenging content standards and student performance standards, and whose education has been interrupted during the regular school year (Section 1306). SEAs may also wish to consider additional factors, including the number of migrant children and youth enrolled in the schools in the LEA and the ability of the LEA to meet the special needs of such children and youth. Additionally, in awarding subgrants, SEAs may wish to consider the following factors: the extent to which the LEA will coordinate services with other state and local agencies serving migrant children and youth; how the proposed use of funds will facilitate the enrollment, attendance, and success in school of migrant children and youth; and other criteria that the SEA deems appropriate.

EXAMPLE OF FACTORS TO BE CONSIDERED IN MAKING SUBGRANTS

- ✓ Number of students and extent of the need of students selected for participation;
- ✓ Number of students whose education has been interrupted during the regular school year;
- ✓ Personnel required, both numbers and types;
- ✓ Availability of MEP funds, and availability of instructional and other services from other funding sources; and
- ✓ Facility and equipment needs.

The statute does *not* authorize states to apply a hold-harmless provision when determining the amount of MEP funds to be provided to local operating agencies. (Hold-harmless provisions cap the year-to-year change in subgrant amounts (e.g., +/- 15%), regardless of the numbers or needs of migrant students to be served each year by the various local operating agencies.) States have great flexibility in determining the best way to distribute MEP funds among their local operating agencies. However, in exercising this flexibility, SEAs need to ensure that their subgrant procedures are compatible with their responsibilities under the state-administered MEP to use program funds on a statewide basis in ways that best address the needs and service priorities of migrant children.

While the prior statute generally required that children who were "currently migrant" (i.e., children who had made a qualifying move within the past 12 months) be given priority for services over less recently mobile migrant children, the new statute establishes ***a new and much different priority*** for the receipt of services under the MEP. Under Section 1304(d) of the new ESEA, state MEPs must give priority for services to migrant children --

- Who are failing, or most at risk of failing, to meet the state's content and performance standards; ***AND***
- Whose education has been interrupted during the regular school year.

State MEPs must establish and implement appropriate procedures to identify and target services to such children. There is no single correct way to do so. However, as the first "yardstick" for determining the degree to which a migrant child is at risk of failing to meet challenging state standards, the state MEP could examine a migrant child's performance on the assessment instruments the state (or LEA) uses to assess mastery of its established content standards Those migrant children whose results on state assessments show them to be the furthest from meeting the state's standards would be served first. If the state does not have assessment data on a particular migrant child (e.g., the child was not present in the district when the assessment was administered), then the state might use other relevant information, like the degree to which the child is subject to multiple risk factors (e.g., being overage or behind grade level, eligible for free/reduced price lunch, limited English proficient) to determine the child's need for services. Among the children determined to be failing or most at risk of failing, priority for service would be given to those children whose education has been interrupted during the regular school year. The state, in collaboration with local operating agencies, is free to determine what constitutes "educational interruption" under Section 1304(d).

The new service priority does not necessarily preclude the provision of MEP services to those migrant children who do not meet the priority. The state could still operate projects for these migrant children if it made services available to those children who meet the two elements of the priority before providing MEP services to other migrant children. For example, a state MEP operating only summer term projects could serve migrant children who reside in the state during the summer but who do not experience interrupted schooling during the regular school year, if those migrant students who meet the service priorities are already being served.

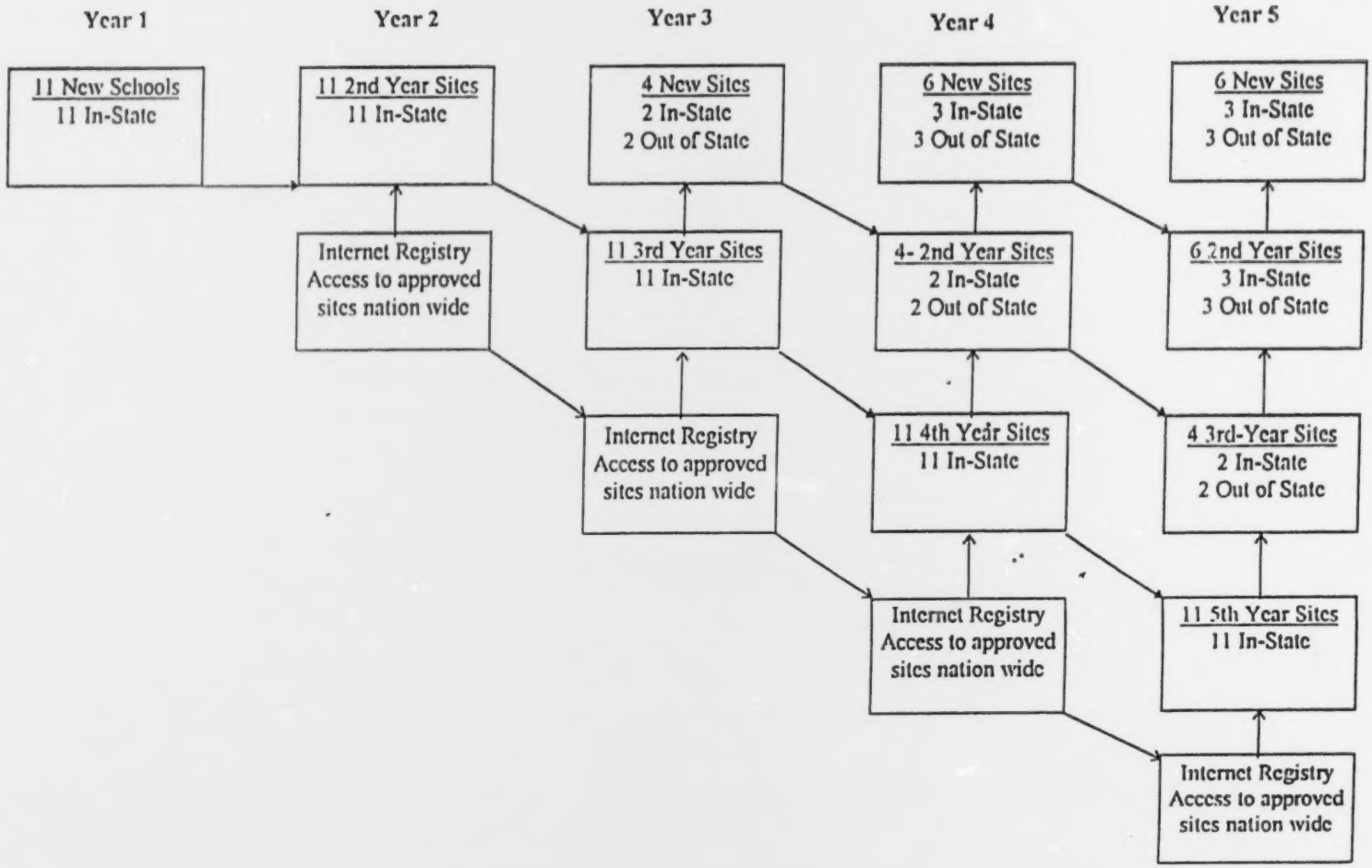
Appendix 2

Pages 2-27 through 2-32

Omitted

To Maintain Student Confidentiality

Kentucky Migrant Technology Project 5 Year Expansion Plan



TOTALS

11 Sites | 15 Sites | 21 Sites | 27 Sites

Appendix 3

Louisville Courier-Journal
July 20, 1998
Page A-1

Influx of immigrant workers strains services in Kentucky

By JOSEPH GERTH
The Courier-Journal

SHELBYVILLE, Ky. — Santiago Rosas hasn't seen his wife and four children for 2½ years. He left them in a small village outside Mexico City because he couldn't earn enough by farming there to support them.

"Economics," he said, explaining why he left his family behind to find work in the United States.

Rosas, who speaks little English, lives in a small apartment in Shelbyville with his brother-in-law and three other men. He is a janitor in a nearby plant and sends part of his paycheck home each month to help pay the bills.

Rosas, 47, is one of a growing number of Hispanic laborers who have come to Kentucky in search of higher paying jobs. But as their number increases, so does the need for social services to help them survive.

The influx of Hispanic workers, while helping tobacco, horse farms and other industries that can't find workers without them, is placing a strain on communities that are ill-equipped to handle them.

Few communities have police officers, court or government workers who can communicate with the immigrants. There is little low-cost housing for the workers, who usually send much of their paychecks home, and many don't receive adequate health care.

A Hispanic ministry was founded at Chaplin Baptist Church in Nelson County about five years ago. It feeds some of the workers.

In part that's because social-service agencies that get federal money are prohibited from serving illegal immigrants.

In many cases, churches have stepped in with programs aimed at immigrants and migrant workers.

Centro Latino is such a program. One recent afternoon, Rosas brought his brother-in-law, Baldomero Corona, who had just arrived from Florida. He was hoping that Sister Lil Mattingly, who runs the program out of a small building at the Catholic Church of the Annunciation in Shelbyville, could help Corona find a job.

The agency, which helps Latinos in mainly Shelby and Henry counties, serves as a clearinghouse for potential employers. It also provides emergency food, free clothing, English classes and Spanish-language Masses.

Mattingly and her assistant, Carmen Valenzuela, a young Guatamalan woman, take workers to the

See INFLUX
Back page, col. 1, this section

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Louisville Courier-Journal
July 20, 1998
Page A-1

Hospitality for Hispanic laborers

BY JIM ROSHAN, SPECIAL TO THE COURIER-JOURNAL

Sister Lil Mattingly, who runs Centro Latino in Shelbyville, talked with an immigrant worker about his health problems. Mattingly and an assistant take such men to job interviews and doctors.

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PHOTOS BY JIM ROSHAN, SPECIAL TO THE COURIER-JOURNAL

Sister Lupe Arciniega, who works for Catholic Charities and heads a mission out of Bardstown, explained to Juan, a migrant worker, how to use a telephone calling card to reach his family in Mexico.

tive of Puerto Rico, speaks Spanish.

One gray-haired church member who was helping serve ham struggled to deal with the migrants' culinary tastes. "Do you want some of this?" she asked a visitor as she reached out with a bottle of cayenne pepper sauce.

But William Holt, who has been working with the program since it began, said he believes it's working well. "It just seemed like the right thing to do," he said. Although he speaks no Spanish, Holt said, "I can communicate with them. . . . All you have to do is take your time."

NEVERTHELESS, it's frustrating for many of the Latinos to be in a country where hardly anyone speaks their language, said Sister Lupe Arciniega, who works for Catholic Charities and heads a mission out of St. Monica Catholic Church in Bardstown.

One young man in Lebanon who identified himself only as Emilo, said he is looking forward to returning to California once the tobacco is harvested. There are more Mexicans there, he said, more people who speak his language.

But Arciniega said the biggest problem is housing.

"They all come to me and say, 'Find me a job with a trailer,' " she said.

Before she lines up a job for a migrant worker, she asks the farmers how much they pay and what kind of housing they will provide. The tobacco farmers need the migrant workers, and Arciniega believes they should be able to pay at least $8 per hour.

Housing is a difficult problem. The H-2A program allows workers into the country for short periods if the farmer they contract with pays a minimum wage and provides adequate housing.

FARMERS IN that program must also pay for transportation and workers' compensation insurance, and make efforts to hire U.S. workers.

That makes it expensive for farmers to hire legal immigrants. With that in mind, three years ago, Arciniega began building bunk houses for migrants with the help of the Church of the Epiphany, a Catholic parish in Jefferson County.

This year, on a Marion County farm, there are four buildings with bedrooms for migrant workers and another building with a kitchen and a large bathroom that will easily serve the 12 men who will live there this fall.

Women and alcohol are not allowed — both are problems among some migrant workers because the men are lonely and far from home, Arciniega said.

The growing number of Hispanics has created more work — and that's one reason Arciniega may stop the weekly Spanish Mass that she has arranged in past years.

At the end of the week, the men are tired and don't want to go to church, and it's also getting harder to arrange for a Spanish-speaking priest every Sunday.

"I don't do religion anymore," joked the nun.

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Continued from Page One

U.S. Immigration and Naturalization Service office in Louisville and to job interviews and to doctors.

Although Rosas misses his family, the work here pays up to several hundred dollars a week. Back home, laborers might earn $5 a day.

MANY OF THE laborers who come to Kentucky are truly migrants — moving from state to state to find work as crops arrive. Others take on menial jobs in hotels, restaurants and factories that — with near-record-low unemployment rates — Kentucky businesses find hard to fill.

"They aren't taking our jobs," said Mattingly, who has been at Centro Latino about a year after spending 20 years in Bolivia. "These are jobs we don't want."

Rod Kuegel, president of the Burley Tobacco Growers Cooperative Association, has said that farmers responsible for 85 percent of the state's crop now use migrant workers in jobs that were done by Kentuckians just a generation ago.

The immigrant workers enter the country several ways. Some have long-term work permits, known as green cards, that allow them to stay in the country for years at a time. Others qualify for the U.S. Department of Labor's H-2A program, which allows them to work on farms for one growing season.

Others are in the country illegally, having stayed longer than their original work permits allowed or buying forged permits — which often sell for as much as $1,000 each.

THE NUMBER of Spanish-speaking migrants and immigrants in Kentucky is unknown.

In 1997, 2,402 laborers came into Kentucky under the H-2A program. Nationally, about 25,000 immigrants came into the United States under the program, and Andrew Yarrow, a Labor Department spokesman, said that number is expected to increase significantly this year.

In 1996, the last year for which numbers are available, federal immigration figures show that at least 167 South Americans and Central Americans entered the United States legally with the intention of living in Kentucky. In that same year, the immigration service estimated that of the 5 million illegal immigrants in the country, 6,000 were in Kentucky.

BUT THE TOTAL number of migrant workers in Kentucky appears to be much higher, according to those who work with them.

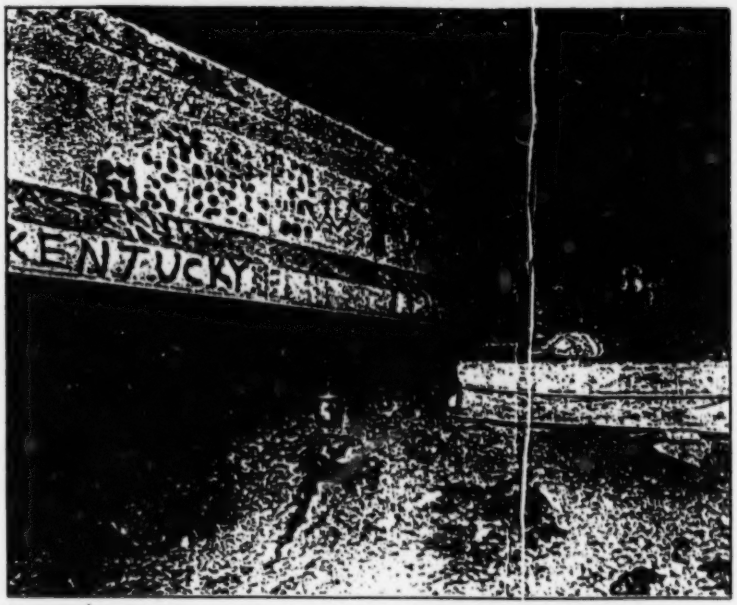
Some cities are beginning to recognize the workers' special needs. The city of Shelbyville has hired a woman who is bilingual to work as a liaison between city government and Spanish-speaking residents.

Some Bowling Green police officers are learning to speak Spanish, and groups have formed in both Louisville and Lexington in preparation for a continuing wave of Hispanic immigrants lured by jobs.

And Catholic churches in places like Georgetown and Lexington offer Spanish-language Masses.

Although most of the Hispanic workers come from Catholic families, some Protestant churches are helping tend to more than the workers' spiritual needs.

ONE RECENT Sunday night, Martin Orta sat in Chaplin Baptist Church, tapping a tambourine and singing "How Great Thou Art" in Spanish.



Some migrant farm workers have been living under this bridge in Shelby County. The workers usually send most of their pay to their families in Latin America.

"I can communicate with them. . . . All you have to do is take your time."

William Holt, who works in Chaplin Baptist Church's program for Hispanic workers

Orta has been coming to Kentucky for about four years to work on tobacco farms near Chaplin, a town in Nelson County, and for most of that time he has been attending church at Chaplin, where the Rev. Carlos De la Barra founded a Hispanic ministry about five years ago.

Most of the workers who attend church in Chaplin come from the Mexican village of Panuco in Vera Cruz. On this night, about 70 people, mostly men, came for English classes, a ham dinner and the church service.

LIKE MOST OF the men, Orta supports his family back in Panuco. He lives in Kentucky about eight months each year, then spends the winter months with his wife, son and daughter in Panuco. He does construction work there, earning about $4 a day. Here, he makes about $250 a week.

For Orta and the others, the program at Chaplin has been a great help. Most left the church last Sunday carrying a box of food — canned goods, beans, spaghetti, marshmallows and cereal. Some also carried study sheets to help them with English.

The food helps Orta, who sends all but about $50 home each week, get by. He lives in a trailer he shares with seven other men on the farm where he works — a trailer provided free by the farmer.

The church is still struggling in many ways to adapt to its new members. Only one church member, a na-

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Appendix 3

Pages 3-6 through 3-9

Omitted

To Maintain Participant Confidentiality

Management Plan/Plan of Operation
Kentucky Migrant Technology Project

The project goals and objectives noted on pages 30-32 in the grant proposal have been addressed specifically in the Management Plan/Plan of Operation found on pages 33-37 in the grant proposal. What follows is a summary of the progress made on the process objectives found in this plan as well as the specific outcome objectives which are found in sections II and III in this document.

KEY to Person Responsible for Each Activity: D= Project Director C= Project Coordinator S= Curriculum Specialist T= Technology Specialist DT= Data/Tracking Specialist I= Interpreters P= Paraprofessional,=Student Family Educator (SFE) E= Evaluator

PROJECT ACTIVITIES TOWARD FULFILLING OBJECTIVES 1997-1998

I. PROVIDE ONGOING ORGANIZATION AND PLANNING

Notify community of grant award and project scope through press release in local papers (D)

All local papers in participating districts were notified of the award through dissemination of the official news release distributed from the U.S. Department of Education. Personal notification was also made to each district superintendent and migrant education coordinator. The Louisville Courier Journal was also notified of the grant through a press release.

Hire Staff (D)

Upon notification of the award, the project coordinator and director began the process of posting job positions and interviewing appropriately qualified candidates. All staff members were interviewed and hired by the end of December 1997. The Data Entry position was not filled do to our desire to have the Migrant Student Registry developed further. The registry will be a large component of this persons responsibilities thus the need to have a working product in place before he/she is hired. This position is now being posted and will be filled now that we have a working model in place and the project has more clearly identified personnel needs. Staff names and job descriptions can be seen on our webpage at www.migrant.org

Identify local school staff who will be involved in project implementation (PC)

The selection process was conducted by contacting district migrant and English as a Second Language coordinators. Meetings were held and staff identified to participate in the project during year one. Each district had from one to three lead teachers involved in project activities. Most of these teachers also had aides that worked with the students and project staff at different times throughout the school year. As more schools join the project additional teachers will be added.

Order materials and computer equipment (PC)

School and office materials were ordered beginning in September 1998. Once the projects field based staff were hired they began identifying school and community sites to place the equipment that we had requested in the project proposal. Please see appendices A for a list of equipment and placement sites.

Schedule and conduct training for project and site personnel (PC)

Initial project orientation was conducted by the project coordinator with new staff as they were hired. This continued until staff were familiar with the goals and objectives of the grant. Staff then proceeded to conduct training using two different approaches. The first consisted of direct 1:1 training of teachers who would be working with the project and had a comfort level with computers and technology. The other method involved our Student Family Educators working directly with migrant students on how to use the various forms of technology we were able to provide and those already existing at their schools. These ranged from simply showing students how to access educational software we provided to training students to use digital cameras and how to develop multimedia presentations using Microsoft PowerPoint.. More individualized trainings have also been conducted by our Student Family Educators (SFE) with teachers at their school site. Please see appendices B for a list trainings

Prepare project brochures and flyers (PC)

Please see a project brochure in appendices C.

Identify existing Migrant students and recruit dropouts and enroll into project (P&I)

The identification of students for project participation was easily done by working through district migrant advocates and recruiters. These individuals quickly guided us to schools, teachers, and students who would be eligible for participation in the project. A more challenging task has been to identify students who have dropped out of school and encourage them to re-enroll or pursue other forms of training. Many students we have found feel that their earning power supersedes the need for an education. To address this problem, we are developing ways that our New Learning Communities can provide

needed information or technological resources that might improve there knowledge base and standard of living.

Hold meetings with district technology coordinator to discuss equipment placement and installation (T)

District technology coordinators were contacted directly once the grant notifications were made public. Given the wide range of computer technology in our schools it posed numerous challenges both technologically and logistically. Many districts in Kentucky were some of the first school districts in the country to be wired and connected to the Internet using high speed T1 lines. Unfortunately, now these 5-7 year old computer networks are unable to run current state of the art software or do so in an extremely slow manner. These issues have been dealt with by bringing schools on slowly and placing the computers purchased through the project in strategic locations that maximize their potential utilization.

Begin installation and setup of computer equipment and software at sites (T)

Selected schools were targeted for network installations and others were provided individual computers that ran advanced software applications that their present school computers were not able to run. This proceeded throughout participating districts and our first new learning community site.

Identify locations for pre GED & GED 2000 software at Learning Centers, Libraries, FRYSC (PC)

The identification process was begun with a few select Learning or Adult Education Centers targeted for software deployment within the project startup region. This will occur in the fall of 1998.

Begin curriculum development of Life Management into multimedia format (S&I)

The Life Management Curriculum was reviewed by our two staff curriculum specialists once they were hired. Efforts are now underway to have this information placed onto a CD-ROM for distribution to interested teachers and school districts. We have focused this year primarily on elementary age students, which is where most of our needs are at the present time. Since the Life Management Curriculum is designed for high school students, material from the Internet was gathered and is being integrated into a multimedia format for elementary age students. Themes include such things as friendship and starting school.

Provide Annual Report to OVEC Board, Advisory Council, and funding source (D&PC)

The annual report will be completed by May 29, 1998 and disseminated to the Office of Migrant Education, OVEC Board, and the Advisory Council at their first meeting. We are also completing a project evaluation report for year one.

Meeting with Federal Project officers in Washington (D)

Meeting with Federal OME Project officers has been ongoing during the year. These have included two meetings in Washington to launch and review project initiatives. Regular site visits by OME and their project consultants have also been conducted. Our staff have also met with OME officers at the National Migrant Conference and NCES MIS conference. The time Frank Odaz and Nancy Carson have spent with the project staff and families have been beneficial and improved our vision of this project.

II.ENSURING ACADEMIC PERFORMANCE

Conducting two days of training on AEC multimedia software, Internet access & navigation, electronic Web based migrant registry, and electronic portfolios (PC)
Goal/Objective: 1.1
Numerous trainings have been conducted with project staff and teacher personnel. Those teachers initially selected to utilize the AEC software and other applications provided by the grant have received training. These sessions varied from short orientations for those familiar with technology to longer more detailed sessions for teachers who have not utilized such technology before. Please see appendices B for a list of trainings.

Organize bi-monthly training and support for teachers and paraprofessionals (S&PC)
Goal/Objective: 1.1
Regular training and support for teachers and paraprofessionals (Student Family Educators) have varied from school to school. Regular support for SFE has not been a problem this year with the two employed. They are housed in the OVEC office and have regular contact with other project staff and the coordinator. This helps to keep them informed and up to date on progress toward overall objectives. Teacher support has been varied from district to district depending on the level of need each participating school has. This first year has also been a time to fine tune initiatives that will prove the most beneficial to migrant students in school.

Coordinate instruction of the "Advanced Learning System" software through the regular classroom teacher and migrant education staff during regular and after school sessions, summer school, and home schooling (P&I)
Goal/Objective: 1.5
The Advanced Learning System has been placed into participating schools during year one. Training was provided to teachers and teacher aides who would be using it this year.

Meet monthly with Project Coordinator to discuss the progress of the project (D)

These meetings are held on a weekly basis to facilitate the progress needed to meet our goals and timelines. Given the size and complexity of the project we felt that weekly meeting would be a necessity. Email has also helped with communication between our staff as well as with project consultants and OME officials.

Meet bi-monthly with paraprofessional and representatives from each school site to share information, discuss any problems encountered, and receive required data (D& PC)

Meetings with paraprofessionals (student family educators-SFE) are held almost on a weekly basis. This year has allowed for close contact with our two SFE because they reside in our office and have desks next to the project coordinator. Next year will become more of a challenge as we add more SFE to the project. The meetings with school teachers and staff have mainly been conducted with the SFE and teachers at their individual school sites to address issues and problems.

Establish Advisory Council including representation from the school sites, community businesses and agencies, parents, and students (D&PC)

Names for the advisory council have been generated and invitations will be sent out this summer to serve on the council. This year many startup issues caused a delay in setting up the council. We also felt that the project needed to begin implementation at the school and community level as proposed in the grant and then utilize the council to help refine and address pertinent issues.

Prepare project training videos (PC & S)

Contact has been made with the video company who committed to work with the project. Planning and production will be completed in the summer of 1998.

Hold quarterly meetings of Advisory Council (D&PC)

See above mentioned advisory council notation. Quarterly meetings will be held this upcoming school year.

Report on project's progress quarterly to OVEC Board of Directors and Advisory Council (D&PC)

Monthly reports are presented to the OVEC Board of Directors to update them on the progress of the grant. These reports will also be made to the Advisory Council members on a regular basis.

After school usage has been tried in a PACE (Parent And Child Education) program with some success. Parents indicated that they feel more aware of technology and are learning what their children are in school. Please see appendices D for parent comments and notes and the demographics section under year one configuration of schools and teachers.

Ensure "Advanced Learning System" tracking information is systematically collected (P&I)
Goal/Objective: 1.2
All staff are keenly aware of the importance of systematic data collection. At the end of each school year the data is removed from the ALS Learning Systems and utilized for data analysis. The collection efforts are conducted by the projects SFE.

Beginning to integrate the "Life Management" components into the (ALS) software using it's authorizing tool capabilities (P,I&S)
Goal/Objective: 1.3, 1.4, 1.5
At this time, project staff have not begun to integrate the "Life Management" into the ALS software. This is due to difficulty we experienced utilizing the ALS authoring component of the software. While the authoring component is functional, it does not allow for ease of use by staff or teachers. Alternative ways to utilize the Life Management curriculum in a computer based format are being explored. We are also analyzing what components of the curriculum would be most appropriate and needed by students.

Maintain linkages with Migrant students during school year and help enroll in Migrant summer program (P&I)
Goal/Objective: 1.1, 1.2, 1.3, 1.4
These linkages have been a strong component to our project. While they may not show quantitative data, they are seen in the comments of many students we have served. They include such things as a desire to participate in the project activities next year and commitments to come back to school next year because they were given the extra attention they needed to succeed in school.

Enroll Migrant students who have dropped out of school in center based or home schooling using the "ALS" course and/or the Pre-GED or GED 2000 software (P&I)
Goal/Objective: 1.1, 1.2, 1.3, 1.4
Addressing the needs of dropouts has been a challenging learning experience for us this year. Many of the migrant Latino students who do dropout of school either quickly leave the community or move into paying jobs to support themselves or their families back in South America. Based on input gather from our SFE, community center partners, and local migrant advocates, this is a large problem that they also face. Anglo-American migrant students who have dropped out will be served through our developing partnerships with Adult Education and New Learning Center partnerships.

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Establish relationship with appropriate community agencies (P)
Goal/Objective: 1.1, 1.2, 1.5
Many contacts have been made with local community groups, county governments, health departments, coalitions, and charity groups to name a few. These are ongoing and continuous. These relationships have and will further develop the overall scope of the Kentucky Migrant Technology Project.

Establish relationship with in and out of state school districts which send and receive high numbers of migrant students (P&PC)

Preliminary analysis has been made of student feeder patterns going to and from other states. This information is being used to identify expansion districts and schools at this time. This year attention is being given to those districts within Kentucky and will be expanded in year 3 to feeder states.

Provide instruction in "ALS" software in the regular school setting or the home/dropout setting (P & District Teachers)
Goal/Objective: 1.2, 1.3, 1.4
The ALS software is currently being used in participating schools as noted in the demographics section under year one configuration of schools and teachers.

Provide instruction in "ALS" software in the summer school setting (P, district migrant staff)
Goal/Objective: 1.1, 1.2
Plans are now being made for services to be offered in the summer school program in selected school districts. These services range from computer training and literacy classes with families, students, and teachers to instruction with the ALS Learning System and ESL software developed by the project staff.

Provide instruction in "ALS" software in the adult education center or community agency (PC&P)
Goal/Objective: 1.4, 1.5
The ALS software was placed in our first New Learning Community site in November and has met with only limited success. The comments of staff and adults using the software indicate that it is geared more for school age children rather than adults with learning or literacy problems. The lessons are developed to follow the developmental learning cycle of students in school. No material of high interest and low reading levels is available for adults who cannot read and want to learn. They are required to use lessons for children learning to read that may include learning vowel or consonant sounds before any reading content is provided. What is needed is material of high interest to adults but at a low reading level that they can manage as they begin to learn to read.

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Provide parent involvement component for family members (Migrant Even Start Staff)

Goal/Objective: 1.5

This component of the project has worked quite well. Our strong partnership with Migrant EvenStart has provided a linkage to meet the needs of a number of families. These include parent nights which allow them time to use and learn about computers and share this with their children. Many parents have expressed amazement at what computers can do while they learn side by side with their children.

Prepare students with information that they can provide to their new school districts upon their eventual transfer by training them on how to use the student registry system (P&I)

Goal/Objective: 2.1

Information has been organized to provide to parents about the migrant student registry so they can notify school personnel when they arrive at their new schools. This component is waiting for the trial of the Migrant Registry before it proceeds. The trial is planned for this summer (1998).

Prepare students with information they can use or get help with related to continuing their program of studies from the "ALS" software on the Internet after a relocation (P&I)

Goal/Objective: 1.2, 2.2

At this point in time, development is still underway for the projects Internet based courses. Development is being conducted in close alignment with national standards initiatives and curriculum integration efforts. We also believe that participating schools must demonstrate initiative and have partnered with selected teachers to align specific high school course requirements with daily instruction methodology. By actually enlisting school support in the development of such courses we believe that long term replication efforts will be more successful. We feel that preparing students would be untimely until more courses are online and ready for actual enrollment.

Provide two hour training after school for interested teachers on the Kentucky Migrant Registry, the Advanced Learning System software, Internet access, Electronic portfolios, and the Migrant Student Registry (P&PC)

Goal/Objective: 1.1

See appendices B for various trainings conducted to date. Also note that teachers have received training from our SFE during the school year at their school sites.

Work with parents and students during evening computer lab TRAININGS - after school (P&I)

Goal/Objective: 1.1, 1.5

Project staff have also worked closely with Migrant EvenStart to jointly conduct parent trainings at their homes or local centers to infuse technology and literacy training. See appendices B for a list of trainings conducted to date.

Provide ongoing monitoring of progress for students using "ALS" software (P)
Goal/Objective: 1.1, 1.2
All students using the ALS software have been closely monitored this year by project SFE and their respective teachers. Data has been systematically collected and is now being organized into an end of year report.

Publish a quarterly project newsletter for staff and project participants (S)
Goal/Objective: 1.1, 1.5
Please see appendices C for project newsletters.

III.CONTINUITY OF SERVICES

Design and create Web page housing Kentucky Migrant Technology Project's resources and current events (PC, T, DT, D, P, S, I)
Goal/Objective: 2.1, 2.2, 2.3
Please see our project Webpage located at www.migrant.org

Design Web based registry/database to allow for easy student tracking (PC, T, DT, D, P, S)
Goal/Objective: 2.1, 2.2, 2.3
The web based registry ver. 1 is nearing completion. A trial of the Kentucky Migrant Registry will be conducted this summer to determine specific strengths and weakness' of the system. To see the registry on the Internet, please contact Michael Abell of the Kentucky Migrant Technology Project. Please see appendices E for registry screen shots.

Design and construct framework to be used when publishing student electronic portfolios in the migrant student registry (PC,T,DT,D,P,S I)
Goal/Objective: 2.2, 2.3
This component has been delayed until the completion of the registry to assure that full functionality of the system is utilized and then documented in the framework.

Establish policies and procedures for districts accessing technical and student information from project or district staff over desktop video conferencing using C-U-See-Me software (PC,T, DT, D, P, S, I)
Goal/Objective: 2.1, 2.2, 2.3
This component has been delayed until the completion of the registry to assure that full functionality of the system is utilized and then documented. This will minimize any potential problems with information sharing or technical assistance.

IV. DISSEMINATE INFORMATION ABOUT PROJECT

A. Disseminate information about the project through presentations at local, statewide, or national conferences (D&PC)

Information has been disseminated through presentations at our state's technology conference for schools, the National Migrant Conference, National Farm Workers Opportunity Programs Conference, and local and regional symposiums on migrant farm worker issues.

B. Disseminate project findings through articles published in educational journals and agency newsletters (D&PC)

To date our project has been sponsored in our regional newsletters, local papers and is preparing to be included in a Kentucky Educational Television Network program featuring programs that work with migrant students is schools. We have also prepared an article for publication on the Migrant Registry and are looking for suitable journals to submit to.

C. Disseminate the evaluation reports and other information about project findings and products to the Kentucky Department of Education, U.S. Department of Education, Kentucky, migrant networks and other appropriate agencies (D&PC)

This report is currently being prepared by our project evaluator.

D. Obtain media coverage on the project in participating districts (C)

News releases were sent to all local papers. To date one local paper has written an article while the KY Educational Television Network is now discussing our participation in a special they are producing on migrant education.

E. Disseminate project information and reports on the Internet (PC&T)

Information from this report and our end of year evaluation report will be posted to our website at www.migrant.org. this summer.

V. PREPARE PROCEDURES AND MATERIALS FOR REPLICATION

Revise "Life Management" Curriculum Guide, Teacher's Guide, and Scope and Sequence to allow for integration into components of the "ALS" software and separate stand alone modules using Microsoft PowerPoint presentation software (PC, T, S, I)

Training has been conducted with staff on Microsoft PowerPoint to help incorporate the Life Management material into a digital form. We are currently holding on moving further on this initiative until our internet based courses have been developed further and a clearer need for specific Life Management material is identified.

Prepare training materials for training to be provided to replication sites (D)

Material is now be organized and produced to address the next phase of the project which includes expansion into more districts and states.

Prepare process evaluation narratives which detail the activities of the project, barriers encountered, and changes made, and which will include cost data associated with implementing the model and procedures and forms for carrying out an evaluation of the project (D&PC)

This data has been collected on a continual basis throughout the first year of the project. This information will be incorporated into a report format and disseminated with other project data.

VI. EVALUATE PROJECT

Monitor accomplishment of objectives, activities, and timelines (D)

Please see appendices F for a calendar of events and activities.

Oversee the programmatic, evaluation, and fiscal administrative functions of the project (D)

Please see appendices F and financial report form provided in report.

Devise plan and instrumentation for consistent data collection (D, PC, & E)

Please see section C under project status for data collection framework.

Train project staff on data collection procedures and instrumentation usage (D, PC &E)

Project staff have been made aware of data collection importance and are now completing year one data collection efforts. These include data collection from computers, student and teacher records and notes, along with student and teacher survey forms.

Collect data for process evaluation (PC)

Extensive records have been kept to document the process components of the grant rollout during year one. This will be included with the projects year one evaluation report.

Collect data for outcome evaluation, including data on entire target population and more detailed data on students selected for case studies (PC & E)

Extensive records have been kept to document the outcome components of the grant during year one. This will be included with the projects year one evaluation report.

Analyze data (E)

All data and overall results will be included in the projects year one evaluation report.

Revise program objectives and activities in light of data (D, PC & E)

The project director and coordinator will make program revisions based on year one results. These will be based on actual data along with SFE, teacher, student, and administrative feedback from all personnel involved in the project.

Prepare periodic program reports required by U.S. Department of Education (D)

This report and our end of year evaluation report should meet this goal.

Prepare annual and final evaluation reports (PC, D, & E)

Our end of year evaluation report will be completed by our project evaluator and his staff. This will be disseminated and shared through our publications and website.

Appendix 3

Pages 3-22 through 3-25

Omitted

To Maintain Participant and Staff Confidentiality

Kentucky Migrant Technology Project
Audit List
June 1, 1998

Advanced Learning System Manuals

__21__ Copies

Anecdotal Notes

__6__ Copies

Annual Performance Report

__1__ Copy

Brochures and Literature

__6__ Copies

Data Collection Forms

__8__ Copies

Directory of Migrant Services

__1__ Copy

Eligibility Guidelines

__2__ Copies

ESL Testing Literature

__2__ Copies

End of Month Office Staff Reports

__30__ Copies

Federal Regulations

__1__ Copy

Grant Weakness Action Plan

__7__ Copies

Karen's Files

__2__ Copies

Karla - Parents' Guide to the Internet

__3__ Copies

List - Serve

__3__ Copies

Migrant Education Participation List (Meeting in Washington, D.C. - July, '97)

__1__ Copy

Migrant Patterns Map

__1__ Copy

Migrant Tech Evaluation Plans

__1__ Copy

Migrant Tech Newsletter

__1__ Copy

Mike's Budget/Evaluation Reports

__1__ Copy

Mike's Logs

__6__ Copies

National Migrant Education Conference 1998

__1__ Copy

Power Point Presentation Worksheets

__5__ Copies

Program Objectives/ Measures

__3__ Copies

Project Descriptions

__8__ Copies

Project Overviews

__2__ Copies

Staff Surveys

__7__ Copies

Student List

__1__ Copy

Student Progress Reports

__177__ Copies

Think Quest

__2__ Copies

Washington, D.C. Meeting Misc. Notes and Literature - December, '97

Weekly Plan & Service Logs

__38__ Copies

Appendix 3

Pages 3-30 through 3-44

Omitted

To Maintain Participant Confidentiality

Appendix 4

Computer User's Survey

Name _____

Date _____

School _____

Grade _____

What kinds of computers have you worked with in the past? List the names or brands if you can.

_____

_____

_____

What kinds of software have you worked with in the past? List the names of games, word processing software, and other types of software you have used.

_____

_____

_____

Have you been on the Internet? If yes, describe the sites you've visited.

_____

_____

_____

In general, what is your comfort level with computers? Circle one below.

1	2	3	4	5
Very uncomfortable. I feel afraid when using computers at any time.		Comfortable. I feel good about using computers but still feel I have a lot to learn.		Very comfortable. I feel confident when using computers in all situations.

Teachers should assist students in reading the directions if they need help. Teachers can paraphrase to make the directions more understandable for very young children or for those with very limited English skills.

For example, teachers can paraphrase the points on the rating scale as:

1. I don't like using computers at all. I would rather do other things.

3. I like using computers most of the time. Sometimes I don't.

5. I really like using computers. They are my favorite thing to do.